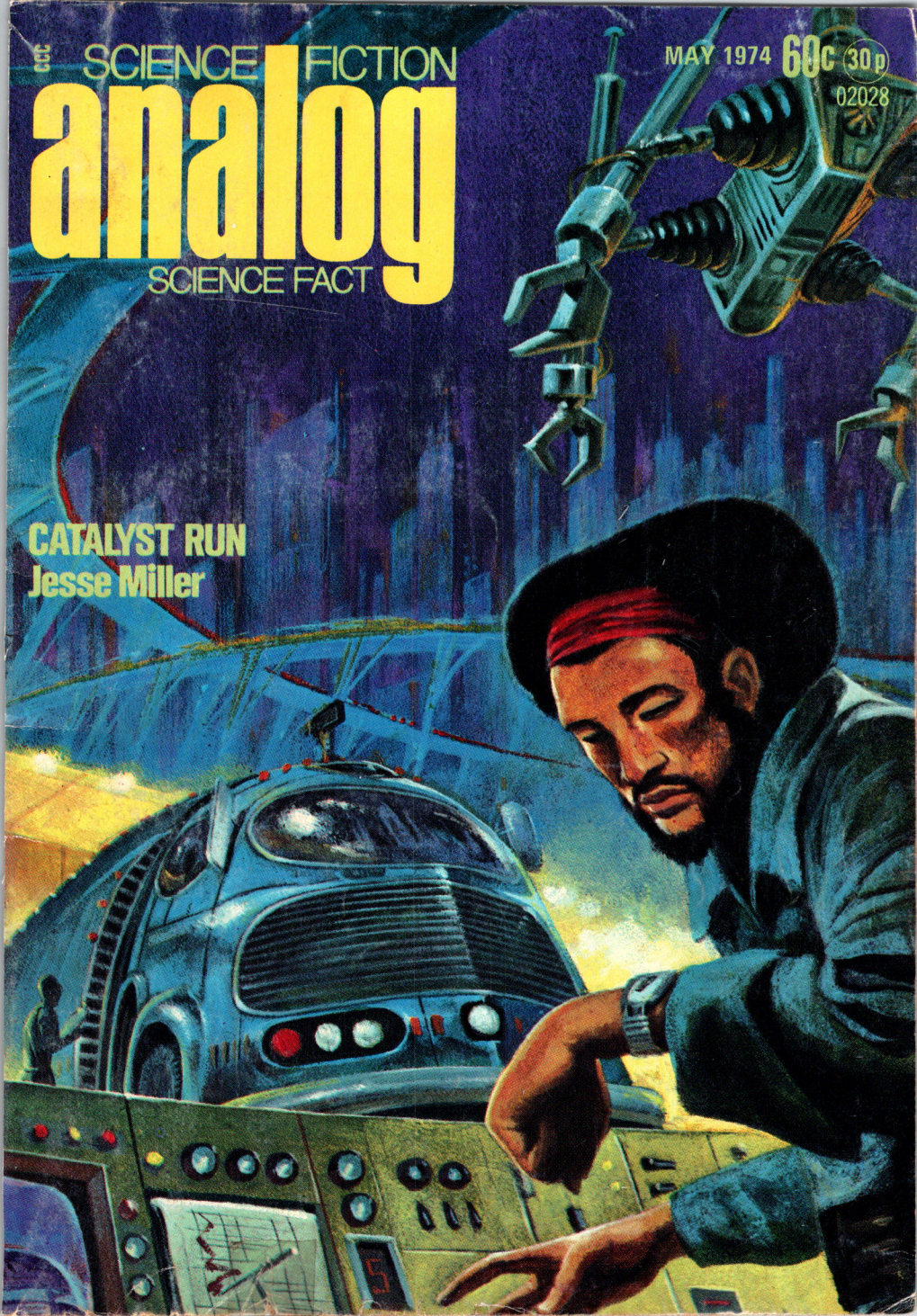
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CATALYST RUN
Jesse Miller

analog

a calendar of upcoming events

May 24-May 27, 1974:
DISCLAVE (Washington, DC Regional SF Conference), Sheraton-Park Hotel, Washington, DC. Guest of Honor, Frank Kelly Freas. Info: A. Gilliland, 2126 Pennsylvania Avenue NW, Washington, DC 20037.

EYECON (Star Trek-oriented Conference), International Hotel, Los Angeles, California. Guests of Honor, Ian and Betty Ballantine. Registration; $6.50 until April 15, 1974; $10 thereafter. Info: Eyecon Committee, 10170 Gould Street, Apartment C, Riverside, California 92503.

THE CONVENTION WITH NO NAME (film convention with a number of SF films), Americana Hotel of New York. Registration: $7.50 until April 30, 1974; $10 thereafter, nonattending $4. Info: The Convention With No Name, Box 561, New York City 10022.

May 29-May 31, 1974:
International Symposium on Multiple-Valued Logic, West Virginia University, Morgantown, West Virginia. Info: Meetings Inquiries, IEEE, 345 East 47 Street, New York City 10017.

May 31-June 3, 1974:
Scandinavian SF Convention, Stockholm, Sweden. Guest of Honor, Brian Aldiss. The Swedish SF Academy Awards will be presented. Registration: $6. Info: Fancon 2, Box 3273, S-103 65 Stockholm, Sweden.

August 29-September 2, 1974:
DISCON II (32nd World SF Convention), Sheraton-Park Hotel, Washington, DC. Guest of Honor, Roger Zelazny. Fan Guest of Honor, Jay Kay Klein. The SF Achievement Awards (Hugos) and John W. Campbell Award for Best New Writer will be presented. Info: Discon II, Box 31127, Washington, DC 20031.

October 31, 1974:
Deadline for entries in the New England SF Association short story contest. Info: NESFA, Box G, MIT Branch, Cambridge, Massachusetts 02139.

—ANTHONY R. LEWIS

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GUEST EDITORIAL

frankenstein phobia

by Joe Allred

Late one night, watching the Dick Cavett show, I heard Robert Francoeur, author of books on the effects of biological discoveries on the future of humanity, say with alarm that biologists had been able to produce "virgin birth" in rabbits and frogs. He speculated about cloned humans with underdeveloped brains cultivated for their transplantable organs. He said that biological research as it might relate to human engineering should be stopped.

The following night, Cavett's guest was Ralph Nader. Cavett pressed the same point, asking Nader if we shouldn't stop these grisly works for the good of man. Nader agreed since ". . . these things are for keeps."

As a biophysicist who has spent the last quarter of my life working in biomedical research, let me tell you about one of the most ghastly efforts I know.

A certain scientist removes the spinal cords from diseased dogs and dries them. He pulverizes this foul substance and injects it into the brains of rabbits. The rabbits are killed and their brains chopped into bits from which still another liquid is extracted which now contains a new and different form of the contagion. This is injected into "volunteer" subjects, often children, in order to alter their biological processes.

Don't you think that the government, pressed by public feeling, should interfere with these incredible experiments with human lives, and keep people (children!) from being forced by overwhelming pressure into cooperating with this arcane practice? If public sentiment can stop the bacterial warfare laboratories, can't we do something about this? No, we can't, since—as you may have recognized—it is Pasteur's treatment for rabies and was complete in 1885.

If this sounds ghastly today, to your sophisticated mind, imagine how it must have sounded to the people of the time when this work was being done. You might think that this description was gruesomely distorted, but the distortion is mild compared to the emotionally inciting verbiage of Francoeur, who expressed horror at the induction of "virgin birth" in frogs and "even now in rabbits."

As a point of fact, you should know that "virgin birth," or *parthenogenesis,* is a *normal* mode of re-

production in many organisms, and its induction is so simple in some (frogs and rabbits) that it can be done by any well-informed high school teacher. It is hardly new, and it is no more astounding than artificial insemination—nor is it any more exploitable. Artificial insemination could *today* be the mechanism, along with eugenics, to produce an army of homogeneous beings *if* we wished to produce one. In laboratories all over the world scientists use strains of mice that are so inbred that they are genetically identical except for the difference in sex. Humans could be inbred to complete homogeneity since they respond to the same biological laws, but is that a realistic possibility?

If we are ever to understand the processes of embryo development and so eventually be able to correct defects, then we must study developing embryos. If we can learn from rabbits and frogs, which certainly we can, then we should consider ourselves blessed. (Whoever heard of frog *birth*, virgin or otherwise, anyway?)

Who would wish to draw a line where we must stop learning because the information we are learning *might* be misused? We already have libraries of information which could be used in inhumane ways if anyone wanted to do so. Example: There are about forty drugs used to save the lives of cancer patients. All of these drugs owe their existence to our knowledge of the biochemistry of genetic material (DNA and RNA). That knowledge springs from research in bacterial genetics which in an *exact* sense is biological engineering. The techniques of basic biochemical research with bacteria are the *identical* techniques which are/were used in the bacterial warfare labs. Even I, with my meager knowledge of bacterial manipulation, could in a single summer produce enough botulin toxin to wipe out an entire city, and engineer a strain of Salmonella bacteria (typhoid fever) potent enough to resist antibiotics, withstand public water supply chlorine levels, and lay epidemic siege to the country, perhaps even to the world. And I could do it for a few hundred dollars in the kitchen of a private home.

Scary? Hell yes it is! What should we do about it? Should we burn down the libraries, incinerate the books and incarcerate the people who hold this information? Or should we simply replace the war research with peace research?

It is a frightening, horror-show thing to have to rely on the responsibility of humans. Every time a building is built a maniac has a place to establish a sniper nest. Perhaps we can brick up the windows and close off the roofs, but what do we do about trees and mountains? We can't hide from the world.

Do we give up anesthesiology

because research has found such things as Sodium Pentothal which can take the thoughts from unwilling minds? If it so frightens us to think of rabbit embryos growing in bottles that we want it stopped, can we ignore children born without limbs or with brains so damaged that they are condemned to live as vegetables?

I give blood to leukemia patients, mostly children, about twice a week. Eventually they die, but they have had days, weeks, months and years of life that they couldn't have had without someone's blood. Each day they live, the probability is greater that a cure will be found so that they can stop borrowing time and actually survive the disease. Years ago blood transfusion was damned and called evil because surely the rich and powerful would create human blood farms so that they would have an adequate supply for their longevity. Doesn't this sound like Dr. Francoeur's speculation about mentally-retarded, cloned human beings kept as a source of organs for transplantation?

This is an excellent example of Francoeur's half-thought-out irresponsible speculations. Cloning of humans is unnecessary for this development. Cloned humans would be nothing more than identical siblings, no different (except for age) than identical twins. Indeed, if you wish to think of it in this way, twinning is merely a process of cloning. Now, in this more realistic perspective, what are the chances that one infant will have its brain development inhibited so that it can serve as a source of transplantable organs for its sibling? A cloned infant would be indistinguishable from a "natural" infant even if the cloned infant was the product of an artificial womb. What makes anyone think that clone children would be any less protected than foundling children are today? We don't use parentless children for organ transplants—can you imagine a mother allowing her adopted child's brain to be destroyed?

Consider this: We know enough about the nutritional needs of human bodies that we can completely sustain humans who cannot ingest food (such as when they are comatose). We know enough about surgery that we can remove anything except for a few vital organs and still retain living beings. We know enough about the technology of artificial limbs to make rather remarkable machines which simulate the functions of living parts. Until now this has been the stringent requirement: to simulate living parts. Remove this requirement and couple it with the need for the perfect fighter pilot and we can create a real monster, *today.* No arms, legs, genitalia, hair, fat or even intestines. No face, just eyes and brain capsule. Everything would be enclosed in fluid inside cushioned,

rigid supports. Installed in the cockpit of a plane designed to be flown by a machine rather than a human, the pilot would control it with microswitch sensors and read-out screens positioned in front of unmoving eyes. The perfect pilot would be insensitive to high acceleration forces and incapable of being distracted from its job. With no need for the wasted motions of arms and legs, it would have lightning-fast reaction times. Trained with essentially the same behavioral modification techniques used to toilet-train children, the pilot's every other desire in life would be replaced with the desire to fly and kill.

Why be afraid of what we will learn tomorrow? With what we know today we can perform atrocities against humanity unequaled in all of history. What we should worry about most is the single-minded control of research. *What happens when only favorite theories are allowed to progress?*

During the reign of Stalin, there arose to power in Russian science a man named T. D. Lysenko, who espoused Lamarckism (acquired characteristics can be inherited). Stalin wanted to believe that the tails of rats could be cut off and their progeny would be born without tails, and that extra arms could be grafted onto soldiers to produce children with extra arms. If you have any doubt that Lamarckism is fallacious, ask a rabbi if it is still necessary, after four thousand years, to circumcise male Jewish infants.

The point is that in spite of the power Lysenko had in Russian science, he was never more than a laughingstock among Western scientists. Western scientists knew from their own work that he was wrong. They had been allowed to experiment freely, and only the theories backed by reproducible experimental proof were accepted, no matter how much political pressure might have been brought to bear. Even Congress cannot repeal the laws of nature (though it has occasionally tried). Suppose Mendel had been stopped and all genetic work forbidden—who then could have repudiated Lysenko? If we are not allowed to pursue truth, who is to protect us from lies?

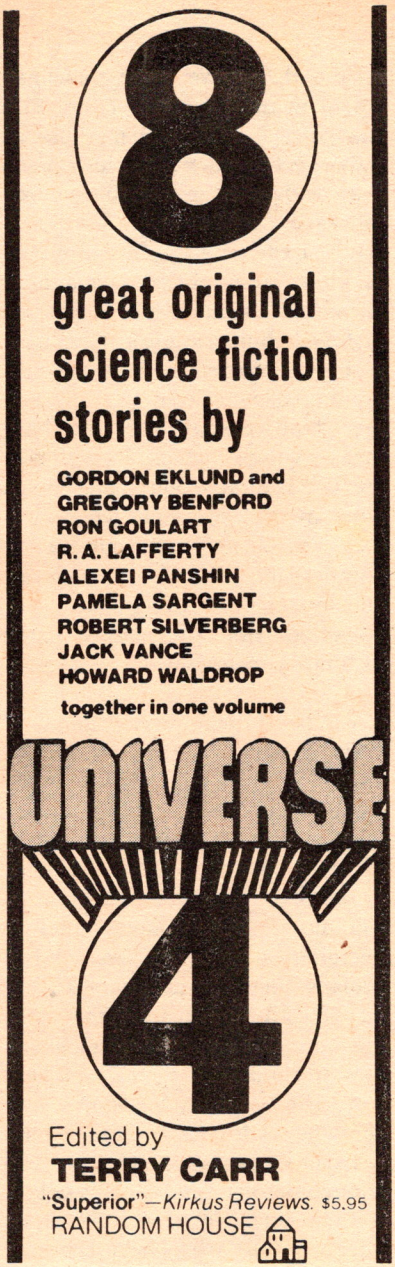
Suppose a man were able to convince a nation that a group of isolated, inbreeding humans will separate genetically from the mainstream of humanity (this is true; a law of eugenics), and furthermore (now for the lie), that a specific group had separated so widely from the main group that they were inferior, hardly human at all. If the German people had been knowledgeable in eugenics, they would have seen that Hitler had coated a tiny truth with a big lie. I cannot think of a better example of Alexander Pope's admonition that "a little knowledge is a dangerous thing." Where science stops, super-

stition takes over, often with disastrous consequences.

A large part of the problem causing the antiscience hysteria is inability to distinguish between *research* and *development.* It is *research* to discover the chemical information that iron and carbon combine to produce the harder substance, steel. It is *development* to make steel and turn it into either plowshares or swords. We may choose to ignore steel and live without plowshares in order to avoid the sins of swords, but whatever laws are passed and however many books are burned, steel will still be the result of combining iron and carbon no matter who makes it for whatever purpose.

Even if we wanted to stop all activities which might change human biology, we can't—so the whole question of "should we" is moot. Two reasons why we cannot stop such activities come immediately to mind.

First, any medical or biological research connects with biological engineering at some point. I have already said that cancer research is fundamentally linked with genetics. To some degree the same may be said of heart research, obstetric, gerontological or even ecological research. At some point questions must be raised about how a given stimulus affects humans, and these questions can only be answered by knowing how humans work as organisms. *Completely.*



Second, we live in an undefined world which we are constantly changing, and every change has its own effect on human biology. Each year there are over two hundred thousand new chemical substances synthesized—ten to twenty thousand of which are produced in quantities of one ton or more. But, only three or four hundred are tested for their biological effects. So there are millions of chemicals in our environment that were not there when humans evolved, which means they are not natural to our biochemical environment. We don't know *how* they are changing us but we do know that *they are changing us*, and we are doing everything in our power to pass those altered genes to future generations.

We have spent several thousand years learning to save weak, sick and defective humans, allowing them to survive to the age where they could reproduce their fouled-up genes. We have succeeded today to the point that it is a rare human who does not have some kind of hereditary defect. The original Hawaiians found it necessary to kill all defective infants so that they did not reproduce their bad genes. I would rather we find a better way. The only way to do this is to continue biological engineering research, so that someday we can correct defects rather than kill or sterilize defective infants. Sooner or later we must start one practice or the other or we will not survive as a species.

Every day, human misery is caused and life is spent just for the sake of profit and convenience. Automobile manufacturers decide that to save a few cents per car a part will remain unimproved, and there is a cost of thousands of days of pain and many years of human life when these parts fail and cause accidents. Just as there is a casualty cost for every operation in war, pollution extracts a cost, taking X number of years from the lives of X number of people. These are horrible conditions which could seem as grotesquely unreal to our grandchildren as slavery and child labor and women working in sweat shops seem to those of us who have only read of such things.

According to National Cancer Institute figures, most cancer cases are the result of extrinsic factors (radiation, chemicals, et cetera) which, if totally eliminated as carcinogens, would probably reduce the number of new cancer cases to ten percent of its present value. Half a million lives each year and tens of millions of person-years of suffering—this is the cost of the "progress" ethic which says, "Use it if it feels good." This ethic is not restricted to the boundaries of the Establishment or anti-Establishment.

If you wish to be horrified at something, be horrified at a society which spends sixty thousand lives a

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year and hundreds of thousands of injuries just for the convenience of cheap transportation.

Ours is a society so nearsighted that it wallows in a swamp of chemicals and radiation known to change the genes of humans in random ways. Yet, we have spent more money in a few days of fighting a small war than in any entire year of doing research about how to survive as a species. Today, in order to get steel for use in sensitive radiation detection equipment, it is necessary to salvage armor plate from very old battleships because steel made since then is too radioactive.

We are causing changes in human biology in many ways, but we have the choice of random change or learning to control the changes and therefore prevent those we don't want.

If you have the imagination to see the present with the eyes of the future then you must see that Francoeur and others like him are selling monster stories at the expense of scientific research we desperately need. It is false to claim that we will make babies to order in artificial wombs simply because we know how. It is a sensational prevarication which sells books. We

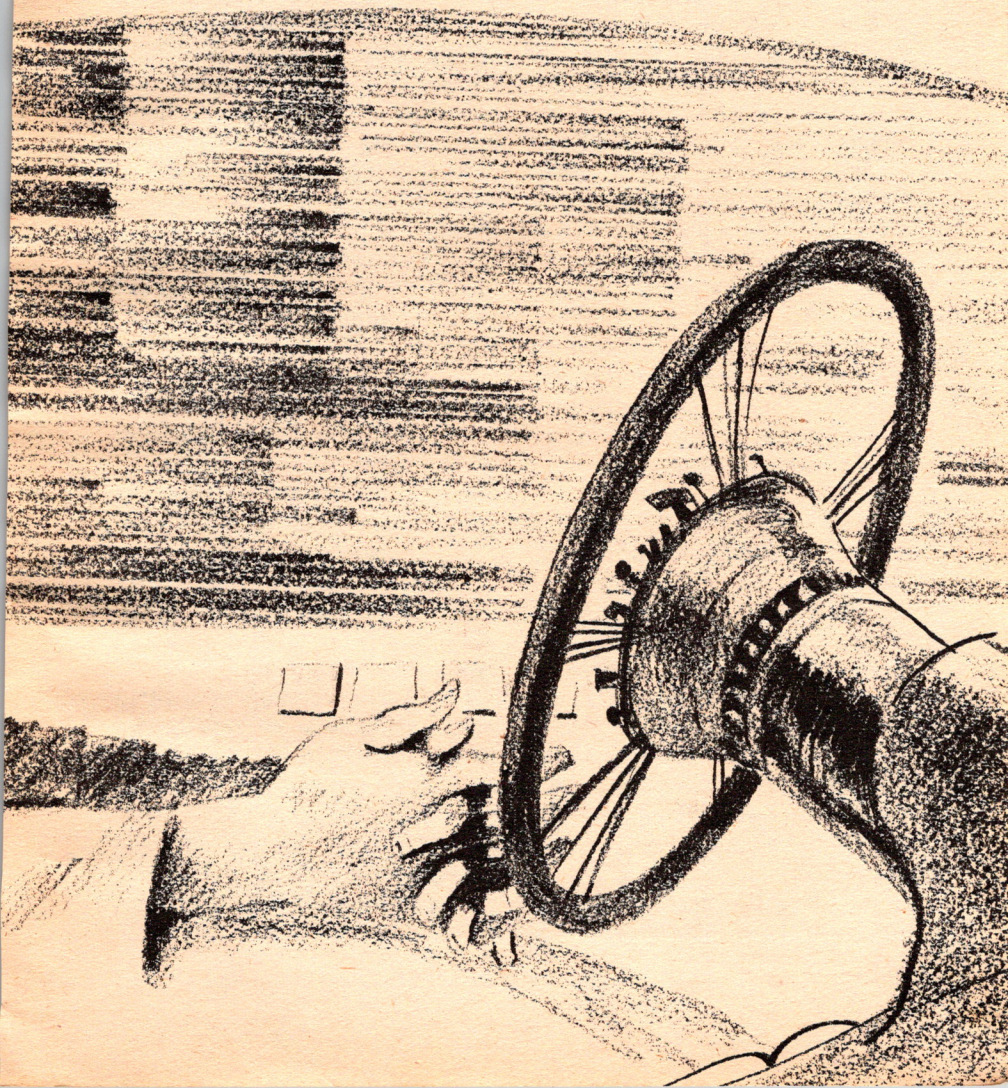
continued on page 176

JESSE MILLER

A catalyst is an agent that accelerates a reaction without being changed itself—much.

catalyst run

JACK GAUGHAN



It was March. The weather vacillated hour by hour, showing signs of spring, the ground softening under a sun as pale as vanilla ice cream, then cloaking over again with tumbling clouds of winter, dark and robust.

Commercialism was at its peak. Men struggled to retire before automation caught up with them, so they could join the ranks of the professional consumers. Of all the transportation complexes in the country, only Detroit's remained unautomated; it was a farm system for supervisors and operators. At every other terminal, there was only a crew of from five to seven men, all graduates of the Detroit system.

The yards there were divided in two segments: Road and Air. The best warehousemen migrated to both segments, not out of love for their profession, but because they hoped to advance.

There were several buildings in the big, sprawling Road Section, but the most imposing by far was the Receiving and Classification Warehouse, Building 200. It was several blocks in length, studded on the outside with doors and ramps at regular intervals. In the inside, running through the center of the building like a spine, there was The Line, a system of rollers upon which the merchandise received was placed.

And there was the railhead, an outdoor holding bay where property too big to go on The Line was stored. Railroad tracks ran through the area too, and there was a little engine, owned and operated by the city of Detroit, and it pulled in boxcars, two or three at a time.

In other yards, all this would have been automated, but here men still worked, hopefully looking over their shoulders at the windows of The Tower, Building 1A. Behind the bay telewindows sat Fat Sid, the foreman, and he missed nothing, selecting switches on his console with the slow relish of an obese woman at her box of chocolates.

Sid watched as the yellow forklifts and warehouse tugs whirred back and forth, busy at their multiple missions. Like bees, they seemed to function with a single consciousness.

The men under Sid worked hard, often stripping to the waist, sweating even though the weather was gusty, always glancing up toward 1A, or if they were inside, over at the cameras, which were everywhere. They seemed to be saying, "Can you see me, Sid, can you appreciate what I'm doing?"

But in the climate-controlled tower Sid was unimpressed with brawn. He was on the lookout for knowledge of the system, something you just couldn't fake. Restlessly, he spent his day touching button after button, sometimes following one man through an assignment, sometimes switching from

area to area at random, never satisfied, always switching, picking, choosing, with his fat, manicured little fingers.

Upon selection, a man could go to supervisor school, or he could train to become an operator. Most of the younger ones wanted to be operators, as that was the more risky selection, and the greater the risk, the greater the glamor. In a world that was bored with everything, a glamorous profession was a rarity. And to be at the top of an exciting field was the dream of every school boy. Who hadn't heard of John Gutley? Who didn't secretly envy him?

The cruiser operators had an intricate system of ethics and complicated codes of behavior. The men at the top were the ones who broke the rules (in a society bound by regulations) and got away with it.

The company selected two men of about equal record, and put them on the same run. The man who pulled in first was the winner. It was that simple. They called it the Catalyst System, and it produced new records, innovations, and not infrequently, death. You were at the top, or you weren't. Anyone whose record was less than John Gutley's was a catalyst.

Unofficially, there were good catalysts and weaker catalysts. Off the record, Richard Arvius was second-best, a loathsome stigma. Arvius preferred to be thought of as just another catalyst, until he took care of Gutley once and for all, and then he would be first.

On this Monday, Arvius was scheduled to go out. He was almost certain he would draw the one operator he had never beaten. Just to be sure, he had parked near the gates and settled down to wait, in his cab-over-engine, turbine Kenworth. Arvius kept his cruiser gleaming and deep with wax. She was blue, and her metalwork sparkled wickedly. From his position, Arvius could see the Hysters and tugs in the yard, scurrying back and forth, and of course he could see The Tower.

Many of the workers recognized Janice, Arvius' cruiser, and although they could not see through her one-way windows, they waved. He didn't bother to return their greetings, they wouldn't know if he was waving or not anyway. Still, they greeted him—out of respect for his reputation, perhaps out of envy—as if by waving they were promising themselves they would get him one day.

Few men doubted that Arvius would beat Gutley eventually. The only question was when. One of the forklifts broke away from the rest and wheeled over, rear wheels steering crazily as the operator drew abreast of the great cruiser and plugged into the jack on the panel behind Janice's door. Arvius stretched and yawned, craning his neck to peer down and see who

this was. The man's voice came over the cab speaker.

"Hey, Arvio! Whatcha doin'?"

"Phillips?"

"Yeah, didn't you know me?"

"Been a while, but I got your voice right off."

"Whatcha been doin'?"

"Same old same old," Arvius said. "How about you?"

"I stopped to tell you I might be goin' up for operator in a few days." The gulf between them did nothing to conceal the pride in the younger man's voice.

"That'll be OK," Arvius replied. "Before you know it, we'll run catalyst together."

"I know it," Phillips said. He sounded delighted, but then his face took on a thoughtful aspect. "Whatcha doin' parked out here, Arvio? Waitin' for your catalyst?"

"Yeah," Arvius admitted. "You seen Gutley?"

Phillips looked impatiently around at The Tower before he answered. "I saw him early this morning, when I was coming in."

Arvius sat up. "Did he go out?"

"Naw. He was in the diner, talking about how he's gonna beat that Arvio again." Phillips smiled shyly. "My money is on you this time."

"Appreciate that," Arvius said. "Why don't you come on up?"

"I just wanted to tell you I'll be seeing you on the road sometime," Phillips said. "But I gotta get back to work." Again, the almost furtive glance over his shoulder.

"OK, take it easy then."

"Drive right." Phillips unplugged and wheeled away. He rejoined the other Material Handling Equipment, quickly blending with the rest of the workers, so to Arvius, he was soon just another busy figure at the bottom, struggling to come up.

Arvius closed his eyes and sank back in the cushions of his lounge-like operator's chair. So Gutley was already in the yards! Tricky Gutley. Arvius considered the old man's ways: Gutley drove an old diesel Peterbuilt which he called Luta.

Every other operator in competition that Arvius knew of, strove to keep his rig immaculate and gleaming, but not John Gutley. Gutley's Luta was black, but instead of waxing and shining her, as any operator in his right mind would, Gutley seemed to take pride in accumulating road dirt. Luta's flanks were streaked with splash marks, as though Gutley had taken her through a short-cut in a field somewhere.

He never cleaned her. They said his cab was a wonder inside: red leather chair, the best equipment, all the comforts of home. But outside, it was a different story. The famous Peterbuilt grill was dull and lusterless, the opaque windshield was covered with grime, except for the half-circle cleared by the sonic wipers. Gutley claimed he was out to work, and he didn't

mind if Luta looked that way.

Any other catalyst, coming up behind a man in a clean turbine, sparkling and efficient in appearance, was a challenge. But to look back and see the dirty black rig of Gutley, looking wickedly seasoned, was enough to make lesser catalysts wonder if they were in the wrong field.

Gutley derided the perfect and shining style of the younger operators, and their rainbow-colored lustrous modern rigs by calling them "toys for boys." That was his way. When asked why he still smoked tobacco and why he refused to take any of the Road Drug, he would say, "Because I got a death wish, just like you."

The man was a puzzle, a throwback, and a winner. Arvius sighed and slid from his cab. He put his head down, and dodging the whizzing MHE, began to trot toward Building 1A.

Sid sat, a corpulent, seasoned brown man, wheezing in his swivel chair. He appeared to have been molded from peanut butter. Arvius stood with his back to the color telewindow, which shifted dizzyingly from extreme close-ups to wide panorama, and back again.

"Morning, Sid."

The foreman grunted without looking up, and he made a brushing movement with a chubby hand. "Outta the way," he said.

Arvius obediently side-stepped. "Sid, I gotta get out right away, Gutley's been in for hours."

"What makes you think you got Gutley?" Sid was watching him now; his eyes were narrow slits.

"Come on, Sid, quit playing."

"I would just like to know who told you." Sid was toying with a stylus, and he used it to punch a button on the console. The telewindow shifted, and there, in the yard, was Phillips, talking to a gaggle of warehousemen, idle beside their MHE, and there was money slipping in pockets. Sid chortled obscenely.

Arvius couldn't contain an exasperated sigh. "Could I have my manifest?" He held out his hand.

"Take it easy, kid," Sid said. He opened a drawer, produced a brown manilla envelope and Arvius took it eagerly. "Now go on," Sid said gruffly. "I got work to do." The telewindow began to shift again, panning and zooming. Arvius stayed where he was.

"That's it?" he asked.

Sid sighed. "Yeah, that's it. If you want ceremony, you know where to go, but you get none of that here."

"Is that where Gutley is? In the diner?"

"What do you think?"

"OK, Sid, be seeing you."

Phillips was waiting by the diner. As Arvius approached, he swung down from his Hyster, and he held out his hand. Without speaking, Arvius opened the manifest envelope, withdrew a page and handed

it to Phillips, who stuffed it quickly in his jacket and winked.

Arvius nodded and went on into the diner.

It was a smoky place, on the property of the Detroit Transportation Complex, and patronized by operators and warehousemen only. No civilians, except for the occasional politician. The men met before a run, and they bet, and threatened each other, and often there were fights. Arvius had been through it all before. He was tired of the ceremonial breakfasts, the lowered glowering eyes, everything but the Road Drug.

Over the mirror behind the counter, there was a picture of a mug of the frothy, ruby drink, and next to that there was a sign which read, "For Better Drive."

An operator Arvius knew was hunched over the counter, his fingers curled lovingly around a mug of the RD. He saw Arvius come through the door in the mirror, and he waved without turning. "Morning, Arvio," he said.

"Hey, Wrigley, how's it goin'?" Arvius slapped the man's back. Wrigley inclined his head toward the windowed side of the diner, and there, at a table with a view of the yard, sat John Gutley, the Top Operator.

Arvius thanked Wrigley and, trying to keep calm, walked directly to Gutley's table. Throughout the diner, Arvius felt attention focusing on him. The old man was by himself in the booth, and Arvius called his name. Gutley turned from the window suddenly, and he looked at Arvius for a second as though he didn't recognize him.

Then he said, "Ah, good morning, my young friend," as though an aide had just whispered in his ear, and he made a general show of being surprised and delighted. His voice dripped with old-style courtliness, and Arvius felt his lips pull back from his teeth in a grin which was positively feral.

"Why don't you cut it out?" he said. As he slid into the booth opposite Gutley, he realized he was trembling. He reached for the menu and stylus, to conceal the shaking of his hands.

Gutley's eyebrows went up, quizzically-innocent perfect little arches, and he made an old-fashioned half rise and a stiff little bow.

"Knock it off, huh?" Arvius said. But Gutley flattened his palm in a gesture of welcome. Struggling to control himself, Arvius turned away from him and looked out into the yard.

He could see Phillips talking to a group of warehousemen, and they were all nodding and smiling. Phillips was giving them money, and the page from Arvius' manifest was in his hand. Arvius nodded to himself. Phillips was a good man. Calmed a little, Arvius turned back to Gutley. "Road Drink?" he said.

Gutley stiffened slightly, but he said, "No, thank you," and Arvius

marveled at the man's control. Everyone knew Gutley never touched the powerful red drug—it was a source of pride to the old man that he won without it.

Arvius smiled and nodded, and touched the stylus to the contact square next to a picture of the RD, identical to the one over the mirror. Almost immediately, a mechiwaiter rolled up, and Arvius reached for his wallet.

But Gutley had his card out already, and he inserted it in the waiter's slot, releasing the pitcher of drug. Arvius lifted it from the tray and placed it on the table. The two men regarded each other as Arvius poured himself a triple dose.

"You know," Gutley purred, "I understand the company puts saltpeter in the RD."

"That's why you thought you'd treat, huh?"

Gutley shrugged.

"Well, as old as you are," Arvius said maliciously, "you might as well have some, because a little saltpeter wouldn't make a bit of difference to you."

Gutley's face flushed. "Drink up," he said. "We have a long trip ahead." He pushed an empty mug across the table to Arvius, who accepted it and poured another triple shot.

"Fencing already, huh?" he said.

"My dear young Arvio," Gutley replied, "in my position, one must always fence."

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"I'll remember that, as soon as this run is over and I have your position."

Gutley's eyes widened, briefly, and he switched to another tactic. "Do you know how close I am to the company? Do you honestly think they'd let a sprout like you beat me?"

"So you are the company doll." Arvius wiped his mouth with the back of his hand. "Well, I'm the top catalyst." The RD was beginning to take hold. Arvius itched to get out on the road.

"So you are, so you are," Gutley said.

"So I am, so I am," Arvius mocked. "You think that heap of bolts and plastibands is going to

top Janice again? You think I'm not wise to every dirty trick you know by now? Hell, Gutley, I'm running rings around you this time."

Gutley looked surprised. "You really haven't heard?" he said.

"Heard what?" Arvius knew he was snarling, but he couldn't help it.

"I've accepted an innovation." Gutley announced.

"*You?*" Arvius was incredulous. "What innovation?"

Gutley held up a finger and triumphantly shook his head "no."

"New engine?"

The shaking head.

"Different guidance system?"

The wagging finger. "Let's just call it a little something new for the top catalyst," Gutley said smoothly.

Arvius forced back the impulse to strangle the old man. He wanted, he thirsted to lace his fingers around Gutley's scrawny loathsome neck, and squeeze, slowly, until those glittering old eyes lost all their tricky luster.

The two men sat there in the corner booth, one nodding "yes" slowly, the other shaking his head "no," and it was as if they were linked together by a set of gears. Neither one ever dreamed how close they truly were.

Arvius was the first to break the spell. He plucked a stylus from the holder and touched for more RD. The mechiwaiter appeared almost instantly, and Arvius took the drug and poured it off into a thermos-like container. "So you won't tell me, eh?" Arvius did not look up from his pouring as he spoke.

"Now it's my turn to tell you to cut it out," Gutley said. "You sound like a very bad movie."

The younger man had finished pouring, and he capped his portable jug before he spoke. "What do you say we hit the road?" He slipped the stylus in his shirt pocket.

"Sounds like a bet to me," Gutley replied. They rose together and strode quickly toward the door. Back out in the yard, Gutley turned to walk away, but Arvius grabbed his elbow.

"I'm going to beat you this time," he said, and he wasn't surprised at the tremor in his voice.

"I don't think so, kid."

Arvius gripped Gutley's elbow harder. "Why don't you think so?" he demanded. "You think this is the RD talking?"

Gutley remained silent, his lined face as inscrutable and mysterious as the one-way windows of the cruisers.

"Maybe it is the drug," Arvius said. "But only partly. I want you to know that no matter what trick you or the bosses may have come out with, I'm wise to you, and you'll never beat me again." Out of the corner of his eye, Arvius spotted Phillips up on the receiving platform; he released Gutley.

"I'll tell you one thing, kid. The only way you'll beat me will be over my dead body." Gutley squared his shoulders and walked rapidly away, in the direction of the railhead.

Arvius watched him go, and he said softly, "So be it." He went over to the platform where Phillips was waiting. The trip meant a lot to him. He felt that he had to beat Gutley now, while the old man was in his prime, at his zenith of experience and wit.

Gutley only intended to hold onto his title. He was old, while Arvius had his life ahead of him, plenty of time to recover from another loss. In addition, it galled Gutley to have to accept an innovation.

The Top Operator loved to brag that he needed no special devices. There were few men indeed who hadn't heard him triumphantly announce that he could put Luta together and take her apart blindfolded. He loved to inform people that he knew her every plastinut and bolt, and he would add, "I know the roads just as well."

The old man had style. He was the most popular Top Operator to come along in many a run.

This was to be his last run, and he intended to make it good. To both operators, everything was on the line this time.

Phillips' hands were on his hips, and he was looking impatiently in Arvius' direction. "All set," the warehouseman said, and he bent and handed down the sheet from Arvius' manifest. "Denver, huh?"

"Yeah," Arvius said, reaching up and taking the manifest page. "Denver."

"On the railhead, number 1074."

"The railhead?"

Phillips looked uncomfortable. "The railhead."

Arvius nodded and turned to pick up Janice, but then he remembered and he said, "Thanks, Phillips, I won't forget."

Phillips nodded. "See you on the road, Arvio."

Just then, a Peterbuilt came sailing around the warehouse, and she was pulling a flatbed with two outsize crates, already tied down. The cruiser was black, and it looked just like Gutley's, but she was so clean, her flanks dazzlingly resplendent, her metalwork all twinkling and aglitter—surely this wasn't Luta, Gutley's grizzled wreck.

But she was, for on the side of the door, painted in white, was the legend: Luta II. As Arvius watched, the cruiser weaved her way through the Hysters and tugs, rumbled over the tracks of the yard, and halted by the gate. Then she was signaling, and gone, headed for the Interstate, and Arvius was left with the page of his manifest in hand. He could hear the big Cummins diesel engine shifting as Gutley took her away along the perimeter road. He stood and listened until the sound of her leaving blended

with the noise of the yard, and then was gone, and he suddenly turned to face Phillips.

But Phillips had disappeared. Arvius had thought to confront him and ask if Gutley had been helped too, and by his sudden absence, Phillips had given him his answer. "Another lesson learned," Arvius said bitterly, and he went over to pick up Janice.

Shortly, the soft pop of a turbine starter rose up over the tumult of the yard. Arvius sat quietly in the cab, waiting for the air pressure to come up. While he waited, he thought about the changed appearance of Luta, and he reasoned that her change had something to do with the innovation Gutley had mentioned. He thought about the new Luta II, splendidly glossy, blazing with luster, and he shook his head. This from the man who said he loved road dirt, and wasn't ashamed to let the world see that he had been working.

Janice's air pressure warning buzzer fell silent, and he put her in gear. The whine of her turbine was pitched low as she rolled smoothly forward. Arvius guided her back around the rear of the R&C building, where the trailers were parked by the railhead. He wasn't overly worried about the jump Gutley had on him. With his powerful newer engine, acceleration was much better than Gutley's diesel could provide.

He did consider the fact that the

old man was not above a little sabotage, and that worried him more than a little. Arvius had no trouble finding number 1074, and as he backed up, he thought about the rumors concerning Gutley, and the old man's almost supernatural ability to foil his catalyst.

Along the three-foot repelectric fence of the Interstate, there were little crystal squares and tags which the cruisers keyed on. When the Interstate repelectric was first introduced, the lead man in a catalyst run often would pull over, and remove a few tags. Then the company, because it had been losing valuable freight, cruisers and operators, came up with the Key

Signal Concept. The KSC was a dead man's control sort of affair.

If anything went wrong, if anything was amiss, a rectangular amber light would come on, and it was the driver's job to punch it out within a time limit which varied according to the degree of the problem. If the operator failed to get the KSC on in time, a buzzer sounded, and the cruiser would shut down.

The Key Signal Concept had defeated a lot of the tag pullers, but not John Gutley. They said the old man could read the tags, and he pulled them in such a way that even the KSC of the following cruiser would be fooled. "Never get behind John Gutley," all the men said.

Arvius' thoughts were interrupted by the *wang* of number 1074 rising up along the groove in the fifth wheel and dropping in, coupling complete. He climbed down from the cab and, pulling on his gloves, coupled up the tractor's air hoses. As he cranked up the trailer dolly, he thought with bitterness about the way Phillips had worked a deal with him, and at the same time, worked out something even better with Gutley. "No wonder he's getting promoted," Arvius said to himself.

At last Janice was ready, and he climbed back into the cab, released the brakes and put her in gear. Her turbine engine growled, low and throaty, a rumbling, powerful bass whistle, and Arvius was glad. He felt closest to Janice when stopping and starting, and control was his.

They rolled out from the line of parked trailers, toward the gate and the perimeter road. Her tandem axles juggled prettily over the ruts and dirty busy surface of the Detroit Terminal. The RD had Arvius, and he gritted his teeth, yielding helplessly to the tension with which he was filled. At last he was on his way.

Within the one-way windows of Luta II, Gutley sat, happy and comfortable, on the red leather operator's chair. When he left the yard, he had seen the kid, standing and talking with Phillips, and he had started grinning and hadn't stopped since. It wasn't that he needed or believed in good omens, but it was a good sign to get away with beginning the run before Arvius even picked up his trailer.

Now Gutley frowned as he depressed Luta's heavy clutch, and moved the gear lever with a snap. The big Peterbuilt seemed to pause and lurch a little, gather and rush. He glanced in his rear-viewer, and there was no sign of Arvius. That was good. Luta II was most vulnerable during acceleration; the slick new turbines all had automatic transmissions. The old man had no doubt about the outcome of this contest. He was certain he would be in Denver hours before Arvius.

Records would be set, yes, but

his seasoned crafty mind was certain Arvius would lose. His load was light, for one thing. The man with the least weight to pull had an advantage, however small. Gutley knew what Arvius was carrying: three pallets, each one groaning with the burden of peak stress.

If Arvius only knew his cargo had been carefully selected by his nemesis. The old man giggled at the thought. There was Arvius, prancing around the yard, making deals with the warehousemen while he had watched, at peace, from the diner window. If Arvius had come to him for help, Gutley would have suggested he go to the foreman, and the bosses. But of course, Arvius was too proud to look to the Top Operator for help, and he would never dream of turning to the company. After all, the kid thought that he was the Top Operator, not just the number-one catalyst. "That," whispered Gutley, "will be his downfall."

Luta II was moving faster now, and the perimiter road had become the service road, parallel to the Interstate. Gutley sighed and wet his lips nervously. There was still no sign of Arvius back there. He looked up from the rear-view screen, and the first Interstate marker appeared along the side of the road. It was a blue and red shield-shaped tag, a sparkle whisking by, to the past, to Arvius' future.

Gutley gave the big wheel a gentle tug, and Luta II rolled across the road to the entrance ramp. Soon they were at the first strip of repelectric fencing, and Gutley, still glancing occasionally at the rear-viewer, prepared to shut down the manual controls. The more the computer of Luta II warmed to the pre-strip, the more Gutley relaxed, although he kept a sharp watch over the instruments.

She labored up to sixty, and Gutley observed critically as the computer, chattering softly, switched them to the center lane. The repelectric was uninterrupted now, and he cranked back his seat, assuming the old monitor position. Luta was on the verge of peaking, and she winked her signals and began to slip over to the third section, the high-traction plastipumice. Immediately, a louder note sailed out from her spinning wheels. This was the romanticized sound, the roar and whistle of hard and fast rolling. It was the sound they meant when they sang songs about trucking; it was the operator's lullaby.

Now the computer's control of Luta was complete, and Gutley knew he was driving right. There would be no challenge from Arvius until his first stop, when the blue Kenworth would have the acceleration advantage, but until then, Gutley felt he was in the clear. Even after that, Arvius would have no chance. It was Gutley's plan to let Arvius pass him. He still had his

innovation to work. His hand dropped to the console ledge beside him, where it encountered a small box, metal and latched, about the size of a tackle-box. Idly, his fingers found the catch, and began to fasten and unfasten it, as though they were anxious to spill out the contents and get it on: The Innovation.

Arvius was coming, rolling slowly at first, then faster and faster along the perimeter road. The fence around the yard appeared to jump and wink crazily, up and down, suddenly closer, now back again, up, and down. Arvius peered into his viewer, set to maximum magnification, hoping against hope he would see the receding bulk of Gutley's rig. He knew Luta II was far ahead, but he knew too that the turbine engine of Janice gave him a chance to catch him. Gutley couldn't have been doing more than fifty or so at this point, and here he was, holding Janice down. She was ready to peak now, and they were nowhere near the repelectric.

If only there was a way to switch control of the rig to the computer, without the repelectric. Then the only problem would be traction, and that could be handled easily: just lay the pumice everywhere. But now, he had to hold Janice back. He didn't dare allow her to push peak while at manual.

Arvius had no idea what it would be like to handle a cruiser moving at better than eighty. Some of the old-time operators insisted such speeds happened all the time in the precomputer days. Arvius didn't know about that, but he did know that if it was true it must have been a frightening thing. The closest analogy he could make was to suppose he was on the plastipumice, and he suddenly lost his computer.

He shook his head. No way. He would literally die. "But wouldn't everything simply shut down?" he asked himself. The first Interstate marker appeared, and Arvius put aside his one-man, road-druggish conversation for later. The marker triggered something in Janice. He could hear her relays fidgeting over the whine of the engine.

She was a tall, somewhat boxy, cab-over-engine Kenworth, pearl blue, lustrous and shining, a twinkling tribute to hours of work, rubbing and buffing. Arvius knew next to nothing about mechanics, and he took out the frustration his ignorance brought him on the finish of his cruiser. She was the antithesis of Gutley's philosophy, which was: Simple, Honest Dirt. Janice seemed eager to roll; Gutley's Luta—even Luta II—appeared to be a resistant, heavy piece of machinery, something only an expert would dare attempt to master, something long-snouted, mean, and lean, a rig in which you could never relax, unless you had a death wish.

But Janice was as sleek as a teardrop, and she looked like flight. To Arvius, she had a mind of her own, in perfect harmony with his. She wanted what he wanted: to beat John Gutley. Arvius loved her as all operators loved their units. He'd never forgotten that Gutley was in love with Luta II also. It was just that he couldn't understand how Gutley could be in love with that particular piece of machinery.

Sometimes, when he was on the pumice, it frightened him to watch how Janice worked, straightening out curves, applying just the right amount of power, sailing up an incline, and whistling down. When he was in the Road Drug state, it didn't matter if they were in Kansas or Maine, time was nothing but a ticking thing somewhere else, and he would adoringly watch her perform. Only vaguely aware of what she was doing, he would see vast amounts of road gulped and swallowed, even as he consumed the drug, ingested through speed, spewed out seemingly in a perpetual rush over the rear-viewer; the air a whamming, tangible force, so that appendages such as mirrors or antennas would have to be withdrawn or swept off; and he would want to shout for joy, and love, because somehow, wherever they were, Janice was with him; and Janice, above all, was capable of getting the job done.

She could cruise at better than two-fifty. Arvius shook his head. Only numbers. The fence on his right disappeared. The terminal was behind them now. Private homes, packed together, no details readily discernible, whistling past. Images frozen, picked up and lingering on the screens: a boy swinging in a tire; a woman, her hair in curlers, doing something in a floppy dress, stooping at work along the side of her house; a school yard, jumping with patches of bright color, children playing, it seemed, all at the same game.

A sprawling shopping center under a tinted dome, green fluorescence fuzzy therein. Ahead, the access road turned slightly, and Arvius knew he would be on the service road next. He shifted his butt from side to side in the chair, anxiously wriggling, looking ahead in the viewer, searching for Gutley. Janice was doing seventy now. Arvius held her there, not wanting to hold her back, but not daring to let her go. "Not yet, not yet," he said. "Come on, Interstate."

Arvius swung the wheel, and he couldn't help smiling as the big cruiser bit, settled low and fairly banked into the sweeping turn. Nothing was as pretty to Arvius as the massive boxy weight of a Kenworth such as Janice, booming along with the marker lights of her trailer up, like Christmas, and moving, moving.

The houses and schools were beginning to thin out along the side of the road. Arvius picked up an-

other Interstate marker, and again Janice noticed, whirring and clicking as she contentedly digested information.

Then ahead, he saw the spidery, concrete pillars of the Interstate overpass. The way to Denver. Its multicolored width stretched high over the access road like a rainbow. Arvius fought back a rush of anxiety, and cranked up his nerve with another dose of RD. Janice, having scented the repelectric, hit her signals, and began to edge over.

The Key Signal came on and Arvius, putting aside the drug, immediately tapped it out. Janice was on the ramp and Arvius, wiping his mouth with the back of his hand, observed critically as they sailed on up. He thought of Luta II somewhere ahead, and he pictured the diesel Peterbuilt laboring over this same stretch of incline. The thought made him feel good.

Janice executed the tricky maneuver of switching to the plastipumice with steady precision. The catch about going to the pumice was the difference in traction between the center lane and the pumiced surface, which resembled a strip of frozen sponge. The traction difference wouldn't have mattered at conventional speeds, but at a cruiser's rate, it was a critical phase of every run every operator was glad to have under his belt. Handled sloppily, the transition could result in disaster.

As Janice slung her left side across the line between the two textures, Arvius' mouth was straight, grim and tight. His fingers were curled tightly around his mug of RD, and he did not relax until *phwitt, phwitt, phwitt,* they flashed by the series of columns that were a part of the interchange he was now leaving behind.

He reminded himself that the Top Operator had an inferior rig, and he was moving against him with a good chance to win. He told himself it would be wise to take things easy, but the RD forced him to press, and he shifted restlessly in his seat, peering ahead in search of Gutley.

But the faster he moved, the more the countryside blurred, and

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Arvius had to scan farther and farther out toward the horizon in order to pick up any details. He could barely make out the shape of the repelectric, doing its high-speed, jerky, back and forth, up and down dance. The tags which studded the fence winked and flashed as he raced along. If he had been able to see them clearly, he would have been at a loss to explain their specific meaning. They were for Janice and the cruisers, and Arvius doubted even Gutley could read them.

It was true that a man might be able to assess their general message by looking at the condition of the surrounding road, but the information the crystal tags bore was constantly updated, with tapes from each record run. An area which triggered brakes one week might call for power the next, and it was useless to try to interfere with the system, in Arvius' view.

Gutley too had begun to settle down. Secure in his lead, he allowed his mind to wander, and he recalled the day about a month earlier when Sid had informed him the bosses wanted him to report.

All right, it was true, Gutley was the company man; still, despite the rumors, he had never met the bosses. And now, Sid eagerly told him, he had been requested. They walked together, Gutley outwardly calm, his pace measured and steady, Sid portly and nervous.

When they arrived, Gutley made a motion with his hand and Sid stopped while the Top Operator paused, took a deep breath and pushed open the door. From out in the hall, Sid caught a glimpse of green carpet, a long table, an immaculate and silent room, a huge telewindow covering one entire wall; and he caught the quickest suggestion of people, twelve or more, before the door swung shut, silently and efficiently resealing the barrier between Sid and the bosses. There was nothing to do but wait, and Sid plopped down in the hall for what seemed an interminable length of time.

When at last the door opened and Gutley reappeared, Sid quickly stood and held out his hand. Gutley walked past him without looking down. "Hey!" Sid exclaimed, and he fell into step beside the Top Operator. Gutley took long strides and Sid was waddling vigorously in order to keep up. Exasperated, he finally grabbed Gutley's arm, and the taller man halted then, turning slowly to face the foreman. "What the hell happened in there, John?"

Gutley was silent.

"What'd they want?"

"I'm to report to Engineering with this," Gutley replied, holding out his arm, and there was the box. Sid's eyes widened. Gutley looked dispassionately at the thing.

"An innovation," he said. "I've accepted an innovation."

The big hangar-size shop where Luta had been rejuvenated was fresh in Gutley's mind. The white-coated technicians worked every night, and Gutley became a familiar part of their job; always lingering by the huge doors of the shop, leaning over their shoulders, itching obviously to help, and always almost, almost in the way. Watching as they broke Luta down, laying her thousands of parts out on clean white cloth, it seemed to Gutley they whispered as they made notes and jabbed at clipboards with sharpened pencils. Gutley recalled wondering at the fact that they all wore glasses, their pencils were always sharp, yet no one ever seemed to sharpen them, they all seemed to have clipboards, and their immaculate lab coats never got dirty.

And bit by bit, they took apart his precious cruiser—youngsters all, they reassured him almost patronizingly, hinted that he wasn't needed, and yet, night after night he would appear. Gradually, they accepted him; he didn't have their formal education, but he knew all about Luta, and he had made changes in her that were not in their myriad texts. They began to respect him, without being aware their attitude was changing.

He helped them more and more, and they presented him with a white coat, which he refused to wear but took home proudly. Gutley did his courtly act for them, and they laughed and unconsciously imitated his supposedly country ways. Gutley was flattered, and they all had a good time as the work was done.

One night when he came in, Luta was ready. They had reassembled her, and they stood around nervously, waiting for him to arrive. When he did appear, they greeted him shyly, and they kept pointing out little touches for him, things they had done. How this would work, what that would do. Luta gleamed and sparkled like new—even better, because when she was new, he hadn't known her. Now every bolt, every rivet shimmered and glowed under the overhead lights, and Gutley to his shame felt tears come to his eyes.

One of the technicians came forward with a can of white enamel and a brush, and on the cruiser's door he painted her name, and after that, the Roman numeral II. Gutley remembered nodding and leaving, beyond words, but he would always know that although he hadn't actually thanked them, they understood.

Running a few miles behind Gutley, Arvius was thinking about Phillips, the forklift operator, and the fact that soon Phillips would be on the road too. He was confident that he would beat Gutley, and he was looking forward to someday creaming Phillips. He had worked against rookies before, but none as

fresh as Phillips. There was something about Phillips, maybe it was the way he was coming up, which reminded Arvius of himself.

Janice was rocketing over the road, in a lane-wide blur, mile after mile. There was nothing but the sound of the wind scrubbing past the cab, and the howling of the turbine engine beneath him. The wheels made a roaring whistle on the pumice, and all was so steady, so regular, that Arvius took some more of the RD. The road wound through the country ahead, and in the viewer, it looked like a strip of tricolored toothpaste.

His brain was filled with pleasing images and memories. He felt himself drifting, and he relaxed. It seemed to Arvius that he could feel Janice knifing ahead, for Denver, through curve and variation, chuckling and humming, all automatic. As they blasted into the flat receptiveness of the Plains States, the sun began to go down ahead. Arvius was too tired to yawn, his mind was speeding, drawn to Denver through a sort of psychic ether which was mostly Road Drug.

At times like these it was his habit to review good periods of the past, event by event, carefully, and he always delighted in the conclusion, like a child, as pleased as if he was hearing a story for the first time.

The Kenworth's headlights popped whitely to life, sweeping far ahead, back and forth as the great cruiser shifted and raced, fairly flying on the repelectric road. In the web of the drug, Arvius sank back and relaxed, remembering.

He recalled his time as a warehouseman, when like Phillips his only ambition had been to become an operator. Those were the days when Gutley had just risen. In his new Peterbuilt, the old man had beaten the reigning Top Operator soundly. Luta had been the second cruiser to incorporate the repelectric systems. The first had been the man Gutley beat, who, it was said, died of fright. Arvius remembered seeing Gutley once or twice, and working for him too, even as Phillips now hustled for the operators.

Life was so much simpler then. Arvius thought about the electric pallet jack he'd operated in those days. Then MHE meant more than Material Handling Equipment; it meant men, work, sweat and fun. The tongs of his pallet jack were double length, long enough to carry two pallets. There was a little platform for the operator, and he steered with a tiller with a twist grip. Three forward speeds, three reverse, and a single rubber-covered push button for overdrive.

Depress that button, and any speed you had was doubled. In his stupor, Arvius smiled, recalling sharply the way he used to whiz up and down the wide aisles in the warehouse, and his expertise at whipping the tiller around and

jerking abruptly into an almost right-angle turn, down a side aisle, and into the rectangular opening of a pallet, as if the big jack was running on tracks. Rumble, rumble, the tongs of the jack would roll in, and Arvius would stop only then, and back out just as quickly as he had entered, this time with a pallet full of merchandise.

Crazy with youth, he would throw back his head and yell "Mate!" when he picked up a pallet, and the other men around the elevator and in various aisles would shake their heads and smile. With two pallets, he would careen from a side aisle and race down the main aisle to the freight elevator, drop them off and head back for more.

Better than anything else, he remembered his sharp instinct for break time. He would work up until the last possible second, and then he would fake it, moving back and forth slowly, jockeying along with everyone else, closer and closer to the break area. Always looking busy, and every once in a while, spotting another man going through similar motions.

Then when the break bell sounded, the men would pour forth in their tugs and warehouse trucks and pallet jacks, toward the break area. They would burst in, "First come, First Served," and they would produce cards and doughnuts, and they would be fully into their break almost before the sound of the bell died away. Characters all, Arvius remembered the waxed mustaches, the darting eyes, the glasses worn up over the top of a gleaming bald head . . .

Once, just before break time, he spotted Hanes lurking behind a huge stack of merchandise, and he had mischievously twisted the tiller grip and inched in slowly, depressed the lift button, and then quickly he had withdrawn, taking with him the cover of Hanes.

The little man ran out into the open, shook his fist and yelled with his lisp, "You'll be thorry, Arvio! You'll be thorry!"

Everyone laughed, including little Eddy Hanes, after a while; but for a long time after, long after it was no longer funny and the supervisors had their eye on Arvius for promotion, he would pick up a pallet and yell his joyous mad yell, and from around the warehouse would drift calls and cries, "You'll be sorry, Arvio!"

The supervisors correctly gathered that the men sensed Arvius was a loner, an individual. He was encouraged to learn the system, and almost before he knew it, he was working directly with the operators; and then, one beautiful day, he was called in by Sid and given the choice: foreman or operator?

Arvius realized the amber Key Signal had been on. He sat up, rubbing his eyes. "How long?" he wondered aloud. The buzzer went on suddenly, and Janice lurched,

her turbine whistling lower and lower as she went through the shutdown procedure. Arvius punched the override switch, but still she came down, the Key Signal lit again and again. Each time he got the light out, it re-lit. Frantically, he looked at the instruments. They all read straight across.

Then a display was coming belatedly into the viewer. Anxiously Arvius watched, waiting for the letters to clear. When he could read it, the display said, "Weigh Station, four minutes." Arvius passed the back of his hand across his forehead. "Have to cut down on the RD," he said to himself.

Janice was off the pumice then, and her speed was falling with increasing rapidity. But it was all right. Maybe Gutley would be at the station. They were nearing conventional speeds when another display came up, and it read: "One minute." Arvius cranked the magnification up on the viewer, and he could see in the distance the glow of the station. He stretched his fingers, nervously opening and closing his hands, getting ready to take over as her speed came down still more.

He felt a tug, and he saw the air pressure gauge flicker. Janice had hit the trailer brakes. The Key Signal again. As he put it out, ready this time with his hand poised over the button, Janice did her signaling, and the bushes along the side of the road stood out for seconds at a time, yellow and red flashes.

They were about to enter Kansas, and it was late. They sailed up over a ridge and floated down, and there was the station. Then they were rolling off, from the extreme right, and the repelectric ended. Arvius took the big wheel and he touched the brakes just enough to disengage Janice. He began to work the trailer brake handle gently, up and down, and the big cruiser dropped below fifty, the thump of the automatic transmission came through the floor boards and carpeting, and it was a solid reassuring knock. He hit the foot brakes again, lightly, and then again more firmly.

Ahead, in the station, there was a double line of trucks. In the center of the two lines the station shanty stood, and Arvius took the line on the left, nosing in close behind a tanker, bulky and greasy, the type Arvius would expect to be pulled by an ancient White.

From the head of the line, two old diesels were pulling out side by side. Arvius could pick up the husky outline of one of the tractors: a Brockway, and the other he wasn't sure of, it could have been a GMC. The two old horses were belching bluish smoke, and shifting gears so laboriously he could hear them from his position at the end of the line. Arvius craned his neck, but there was no sign of Gutley or Luta II. Everyone moved up, and Arvius smiled as he followed suit.

The weigh station was like an oasis. Here it was the driver's world, and here the little men, puffy with pride, walked stiffly among their great machines, exchanging self-conscious greetings and taking themselves very seriously. The world here was made of tapping sounds as operators checked equipment, blinking, flashing lights, laughter and exclamation floating out from anywhere, all under the powerful mercury night lights of the station. To Arvius, the weigh stations at night had an unreal stadium quality, and he loved it. Forgetting his self-admonition about the RD, he took another quick swallow.

Under the lights, the leaves of the trees around the station looked thick and almost fleshy. He watched in the rear-viewer as a unit came snaking in off the Interstate, seemed to pause blinking at the station threshold and then all at once chose the line on the right and came rolling on, halting with an aggressive *schuss* of brakes and flashing of lights.

Arvius looked casually over. He had to admit she was a pretty rig, almost as clean as Janice. Like Janice, she was a turbine cab-over-engine Kenworth, and she was a lavendar color with a metallic tint, and a deep, rich luster. The operator had an aluminum visor across his windshield, and it added a lot to the ready appearance of the big tandem axle cruiser. Arvius watched, grudgingly acknowledging to himself the admiration of his new neighbor, as the operator opened his door and climbed down.

The man walked around stiffly, and Arvius recognized him without recalling his name. Apparently the newcomer was familiar with Arvius too, because he waved, and Arvius blinked his marker lights in return. The man beckoned with his arm and mouthed the words, "Come on down," but it was time to move up again, and Arvius put Janice in gear and rolled forward without bothering to decline the other operator's invitation.

Arvius began to wonder if Gutley had come and gone through the station already, and as he moved farther along the line, he began to suspect that was the case. Luta II was nowhere to be seen. Now his only objective was to get through with the weighing and back on the road. As he moved closer and closer to the scales, he quaffed some more of the RD. By the time he was actually holding for the light, his hands were sweating, and his head was light with the irrepressible tension only rolling could alleviate.

When at last Janice had been weighed and recorded, and he got his light, Arvius was trembling. He gave Janice full power, and she jumped forward, her wheels slipping a little on the metal plates of the scale, as her tremendous power

torqued the wheels. The still air of the station was split by the scream of Janice's turbine and her spinning tires. The cruiser beside him was pulling out simultaneously. Ahead, the double lane from the holding lines narrowed to the single width of the Interstate approach. Neither cruiser gave ground as they accelerated, screaming and thundering, side by side.

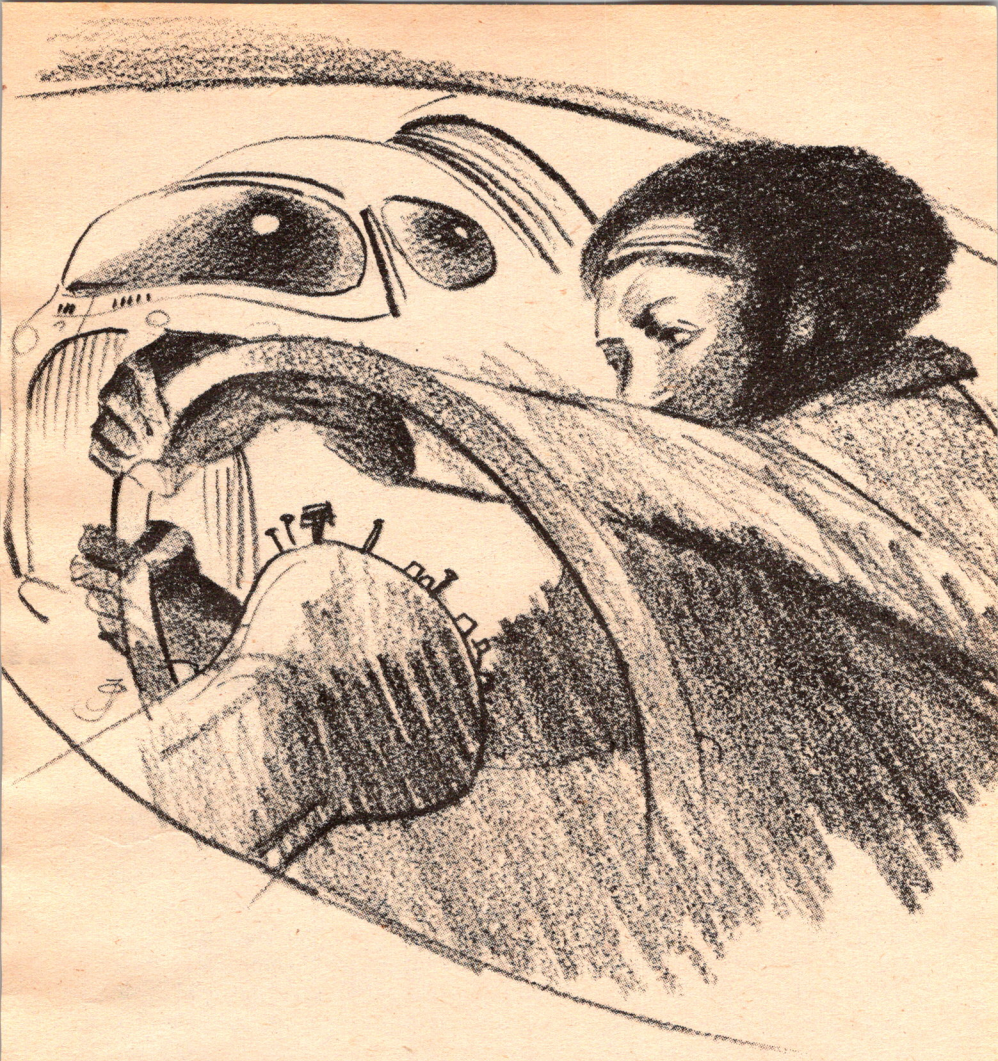
Back in the station, the men, tiredly walking, stiffly slapping at bothersome bugs drawn by the powerful lights, paused to watch the scene unfold at the station exit.

Arvius was gaining speed so rapidly he was pushed back in his chair. He glanced to his right, and the companion rig was rolling right alongside. The approach ramp was just ahead; he could see the repelectric glowing in a line. The unit at his side refused to yield, and although Arvius knew the other man had the right of way, he simply didn't care. Nothing was to come between Janice and Luta II. He reached up and grabbed the horn, pulling the wire far down into his cab. *Pawoout!* "Damn him anyway," Arvius whispered, and then he waved his arms and shouted, "Get back!" although he knew the other driver could not see or hear him.

Miraculously, the other cab's nose did fall back a little, and Arvius knew then the other man was lost. His ears were rent by a shattering bass note of the other Kenworth's horn, but that was all right. "Too late for that!" Arvius yelled, and he laughed, shaking his fist.

He looked ahead then, and he saw why the other cruiser had given up. They were going much too fast. With alarm, he looked down at the speed indicator. It read seventy, and it was climbing rapidly. Ahead there was a turn with a posted sign which read "Maximum safe speed forty-five miles per hour." Arvius knew this turn, it ended with the repelectric, and it was tough to handle at the posted speed. He cut his engine and locked the trailer brakes with one smooth motion. Adrenalin and RD burst through his constricted system with each squidging beat of his heart, for there was nothing to do but hope the unit on his back wouldn't hit him.

The turbine engines sang down together, Janice and the other unit howling *weeeowwmmm* as they fought to retain their equilibrium and stay on the road. Number 1074 was sashaying from side to side over her frozen wheels, and blue smoke plumed up from the hot tire material. The blank facade of the other Kenworth was suddenly in too close, and Arvius braced himself for the crush he knew must come, involuntarily squeezing his eyes shut. But then the other unit's



trailer came walking right around and Arvius, watching, thought, "Jackknife," and through his mind there flashed a picture of a crushed tractor, smoke and grisly death.

The repelectric was alongside now. Both units were screaming and skidding. Janice shook her trailer from side to side. The other unit, much worse off, was out of control, and its trailer was fully perpendicular to the road boundary, marching sideways, near flipping.

The repelectric saved them both. Arvius' hands flew to the controls. He released his brakes and restarted the engine in record time.

Janice settled down almost immediately, keying on the repelectric and running smoothly out of trouble. Accelerating again, she headed for the Interstate the way a shark heads for familiar water.

The other unit was straightening out too. Arvius could see that she was no longer skating sideways, and had begun to right herself. But she was far back, and he cranked up the viewer magnification in order to see more clearly what was happening before the scene was swept from view by a long curve. Back in the station, he could see a dozen or so men, all grouped together, pointing in his direction. He imagined he could hear them laughing, now that it was all over and no one was hurt, but still a few of them had their mouths open.

His camera panned quickly around the station, and the scene was the same, men returning to their jobs, cruisers, new and old, and in the mechanical holding bay, *Luta II.* Then the station was gone and there was only blackness.

There was no doubt. Arvius was certain he had seen Luta's lean black snout in the mechanic's bay. No wonder he hadn't seen her on the line. If the other cruiser hadn't come out right alongside, he would have spotted Gutley right away, but with all the confusion he had almost missed him. So Gutley had broken down. Incredible as it seemed, the contest then was just about over. Arvius had the turbine, the acceleration advantage. He could hardly believe his good fortune.

In the distance ahead, he caught a glimpse of the marker lights of the tanker that had pulled out of the station ahead of him. Janice quickly closed the gap, and blinked her lights. Politely, the slower vehicle edged over and Janice moved up and whisked easily around. Arvius was glad to see that the tanker was a White, as he had guessed back in the station. He was also happy to see that the old vehicle was really laboring as she wallowed along, like some ancient dinosaur; her greasy diesel engine belched and complained hoarsely. Janice eased past slickly, flashing her lights and signaling.

Arvius relaxed and grinned. Gutley was pushing a diesel too. If the old man could do no better than this, he stood no chance, that is if he ever got what had him sidetracked repaired. Things were looking good. Arvius whistled as he reached for more of the RD. The idea now was to put as much distance as possible between himself and the weigh station, before Gutley accomplished his repairs and resumed the chase.

In the rear-viewer, he saw the Kenworth from the near accident coming around the tanker. Who would drive a diesel these days when he had a choice? Arvius shrugged. Gutley could do what he

wanted, but it looked as if Arvius was a sure bet to pull into Denver first.

Luta II was idling in the mechanic's bay at the station. Gutley was perched in his operator's chair, with his head down, deep in thought. If anyone had seen him, they would have assumed he had fallen asleep. He had seen Arvius pulling out like a madman, and he had shaken his head with a slow wise motion, and said, "The kid is full of the RD." Luta II's systems were just turning over. Gutley was relaxed as he reached for the box on the seat beside him, and spilled its contents out on the console ledge. With his finger, he slowly separated the items of the innovation. There was a jack, which sprouted a thick cable. The cable ended by dividing into twelve appendages. One looked like a pirate's eye patch, and Gutley carefully slipped it over his head and fitted the transparent material over his right eye. Another of the weird assortment was a two-finger ring, and this went over his index and middle fingers. There was also a plug for his ear, and a few patches of blank tape. He opened his shirt and put the tape on his abdomen. He was almost ready, and he began to smile wickedly, holding the jack up with one hand and just looking at it as he savored the moment. Luta II's heavy iron breathing as she idled seemed anxious to Gutley, and without further dramatics he took the jack and inserted it in the open plug on the dash.

The gleaming black Peterbuilt which had been in the mechanic's bay for seventeen minutes by the station master's clock suddenly switched on her lights and pulled out. The station master watched Gutley go, and he marveled at the smooth precision with which Competition Systems Inc.'s Top Operator creamily shifted gears. A Kansas State Trooper came over with his steaming mug of RD. His pupils were dilated and there was a fine sheen of sweat on his forehead. "What do ya think he was holdin' for?" the officer said.

The station master shrugged, and he said, "Who knows what John Gutley does anything for?"

Far ahead, Janice was belting along, and Arvius was even more loaded with the drug than the trooper. He had a tolerance built up, and he consumed much more than the average man before it caught up with him, but by the time he was seized by the accumulative effect of the drug, he was usually well into his run. Now he looked back, and every once in a while, he could see the lights of the other Kenworth glimmering briefly, then fading behind a black hill or curve in the road. The other operator was neither gaining nor losing, but pacing, pacing, steadily rolling, the way Arvius liked it.

Janice flashed through the intricate webbing of an interchange, and then the lights of the other cruiser were gone. Arvius was a little lonely then. "Probably pulled off for San Antonio," he muttered.

It was very dark. Once, Arvius switched off all but his marker lights, just to see how dark it truly was. Without the powerful beams, everything was black. Behind and in front of him, all around him, there was only a void, and the blackness had a closing power he could feel. It was drawing in around his cruiser, engulfing him. There was no feeling of speed, only the sound of the wheels ripping over the pumice, and Arvius couldn't tell what Janice was doing anymore, or if she was doing anything at all. In a mild panic, he quickly switched the lights on again. "Only a madman would run in the dark without his lights," he whispered. Then he tried again, to see how long he dared to do it.

He took more of the Road Drug. His eyes were spacey, his body relaxed. He hoped through the film of the drug that Gutley, wherever he was, would stay there. Somehow he knew Gutley wouldn't oblige. Through his torpor he sensed the older man's presence. It seemed he could almost see the angular grace of Luta II, pounding hard behind him and somehow closing the gap.

In a few miles, the Interstate would close. Arvius looked forward to the thirty or forty mile stretch which consisted of local highway. And he wished Luta II would catch up. They would be moving through local towns, stopping for lights, and every time he and Gutley came to a halt, he anticipated the advantage he would have due to the superior torque and acceleration of Janice. Without the repelectric, it would be man to man.

Gutley had been braced when he plugged in, but the impressions and sensations which flooded through him as he roared down were so strong and so unusual, he was very nearly overwhelmed. He was fairly brimming with desire; his lust to win was vicious, almost sexual. And there was the drag of the high-traction pumice: he could *feel* it. The tear of the wind, the wheel was his hands. His fingers lay laced rigidly in his lap, and they twitched this way and that, sometimes jerking up in mid air before him. A little to the right, back to the left, relax, tense, power up, down, off, on, while his body jigged, taut as a wire, juices flowing, muscles loose, tight, open, closed.

Servomotor whining, was that his heart? Freaky corrections, zooming, zooming, the growl of the huge Peterbuilt was a purring in the old man's throat. No difference. They were one, and fly, fly, fly. The catalyst. Devour and pass. Ah, oh. Pistons hammering, in his heart. All good. All healthy, all seasoned. Race, race and drive. Work heart.

Busy mind. Turn over soul. Luta II bore down and ate the miles.

Arvius had been sitting in the same position for hours. His arms were folded across his chest, and he was bolt upright. Oh beautiful movement! He rocked gently back and forth in time with the rushing sway of Janice. If his glazed eyes hadn't flicked and wandered to the instruments occasionally, his condition could have been mistaken for catatonic. It had been many hours since he'd seen the sun, and already he could detect the first subtle signs of dawn breaking behind him. Yet he didn't feel that he'd been confined in the cab for long at all. It was the Road Drug. In fact, his mind was outside, flashing with the cruiser as light and playfully as a shadow.

Janice was rolling well. The hollow insistent booming of her wheels over the pumice was steady, varying in pitch neither up nor down—the mark of regular cruising. Gutley was nowhere as far as Arvius could see. Through the haze of the RD, he felt the corners of his mouth turn up in a cat's curve of a smile. Whatever improvement Gutley had alluded to in the Detroit diner couldn't have been much, because where was the old man now?

Every time Arvius thought about the sweet moment when he had looked back in the station and seen Luta II in the mechanic's bay, his ears went up. He recalled the diesel tanker he had passed, its headlights bobbing in the rear-viewer, and he pretended the old White had been Gutley. Janice had simply rocketed away as the tanker dwindled in the viewer. "Too bad, Gutley," Arvius said. "I gotcha now!"

When he had last seen the White, it had been about the size of a toy, perfect in every detail, and harmless in its distance. Still, Arvius wondered what Gutley had been doing in the holding bay, and he found it hard to believe the old man who knew his rig so well had simply broken down. It occurred to him that Gutley might have deliberately stopped to set up the touted innovation, and he worried about that for a moment, but then he settled down, telling himself, "To hell with it, the only thing that would help Gutley now would be a set of wings, if he could figure out a way to attach them."

But Arvius wasn't as sure as he would have liked to be, and so he kept an eye on the rear-viewer no matter what. Far ahead, there was a flashing yellow glimmer, and he knew even before the display came up that this was the construction. Janice flashed the Key Signal, and Arvius was ready, punching it out almost instantly. The big Kenworth eased off the pumice to the center strip, as carefully as a woman might step over a puddle, and she signaled as she drifted over and rolled onto the right-hand lane.

A new display cleared, and it said, "I-S termination: four minutes." Arvius nodded happily. Under peak magnification, he could see the barriers stretching across the road ahead.

He regretted the necessity of leaving the Interstate. No more roaring west, ripping across the open plains, wide open and screaming. After the construction interval he would be back, but as he stretched his hands and watched for the end of the repelectric his attitude changed, and he began to look forward to the variety and challenge of an old road with no repelectric.

Here skill would tell, and when he felt the telltale tug of the trailer signaling Janice's readiness to relinquish control, he wished Gutley had been somehow able to catch up with him, so he could show the old man up properly, perhaps rendering his dry little bag of tricks inoperative once and for all.

The great speeding machine wound down, and Arvius felt the thump of the turbine disengaging. At that lower speed, he could see the sparkling little tags on the repelectric, and although he knew they all related to the construction ahead, he made no attempt to interpret them. The first printed sign appeared in his lights, green and glowing, and it said, "Squeeze right one-half mile." Arvius watched as it flashed by, diminishing blank-side-up in the rear-viewer, and then ahead there was another sign.

Again he flashed by, and the signs were appearing rapidly now. In the rear-viewer they stood like a line of little soldiers. He took an extra quick nip of the Road Drug and flexed his feet and hands.

In the rear-viewer, he caught a glimpse of headlights dancing. Instantly, he recognized Gutley. There was no doubt or hesitation for Arvius. It was time to run. He looked back again, and the old man had doused his lights. One moment Luta II had been coming full-tilt, even gaining, as Arvius was slowing for the construction, and in the next few seconds, the black Peterbuilt had disappeared. Arvius wondered. How could Gutley have come up so fast? He reasoned that it must have something to do with his innovation.

The sky was no longer pitch black. There was a strip of deep, almost sea green shadow lying across the world at the horizon, behind him. He rolled down his window, and *thoom*, the morning air came blasting in, upsetting empty Road Drink cups and rattling the crinkly pages of the manifest, scattering them all over the cab. Arvius ignored the disturbance and stretched, filling his lungs with clear cool air.

The Key Signal lit up in a final signing off as the repelectric ended. Arvius took the wheel firmly and pulled it, hand over hand. The Kenworth responded, rolling slowly

off the highway into a rut-filled dirt path which connected the local road with the Interstate. Janice would be recording, but without the repelectric she was helpless. Arvius shifted in the seat. Control was completely his.

As the tractor dipped into the pitted strip of earth, Arvius looked back once more. The deep green at the horizon was paler now, almost aqua. The stars were thinning out as gray light seeped smokily through the air, filtering away the night. He could make out buildings here and there along the side of the road, and just barely, less than a mile back, the bulk of Gutley's thundering cruiser.

Arvius moved across the local road and turned left, his headlights basting the walls of a roadside shack, and he thought as he began to pick up speed that the old man must be crazy—he was ripping through all the signs and warning tags as if he cared nothing for them. Arvius shrugged. "Well, he'll care when he gets to the barrier," he said, and he turned his attention to driving.

The smooth whistle of his engine was low-pitched; he had a mental picture of Janice impatiently drumming her fingers while he fumbled through this stretch without the repelectric. He was an excellent driver; in all the company, only Gutley was better. But what human was more efficient than a cruiser well-keyed on repelectric?

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The clouds to the east were streaked with red. In the viewer Arvius could see the exact spot where the hot orange disc of the sun would first appear.

His use of the rear-viewer triggered something that had been sleeping in Janice, and he heard a click as she dropped in a filter. Suddenly, there was Gutley, racing forward out of the morning, blue smoke spewing angrily from Luta II's tall stack, and Arvius thought, "Already the challenge."

A sign ahead said, "Speed Zone, one mile," and Arvius smiled grimly. The big Kenworth lumbered into the town of Titlesborough at precisely thirty, and Gutley's Peterbuilt barreled right

up to within a few feet of Arvius' trailer and held there. Then the two great cruisers gingerly cake-walked through the little town. Janice muttered and moaned, Luta II's huge tenth-generation Cummins diesel belched and spit as her expert operator shifted down, worked the clutch and shifted again.

Arvius looked around at the sleeping village. Three grain storage elevators dominated Titlesborough. There was a little diner with a pick-up cruiser parked in the front yard. Within, the lights were still on. Arvius thought, "They're just beginning to wake up out here," and he turned his head as he wheeled past. A sign of fluorescent tubing winked on and off, pale in the growing light. "Eat . . . Eat . . . Eat . . ." Arvius responded by helping himself to another slug of the RD.

Gutley was packed in so close behind Janice that all Arvius could see of her was the two big mirrors which extruded at conventional speeds. The crescent of the sun was up. In the center of the town a signal was suspended over the middle of the road. As they rolled up to it, it turned yellow, and then quickly, red. Cursing, Arvius brought Janice to a halt and waited. The two big cruisers stood at the light, idling heavily, and after a moment Gutley tapped his horn. Arvius jumped, but he did not return the greeting.

At last the light went green again. Arvius with his automatic transmission was away from the light and well down the road before he looked back. Luta was slowly rolling away from the intersection, and Arvius was delighted. He didn't know how Gutley had caught up with him after holding in Kansas, but it was clear he didn't have a chance to stay with the turbine-engined cruiser now. Again, Arvius was sure of his win. He gleefully watched as the plume of smoke from Luta II's stack was interrupted, resumed, and stopped again. Gutley was shifting gears. The big Peterbuilt had sixteen forward speeds. Arvius laughed aloud.

Titlesborough ended as suddenly as it had begun, and on the open road again, Arvius let his speed creep up around sixty. He didn't dare let Janice roll much faster than this on the unautomated road. If something happened, a civilian cruiser darting from a side road, an animal racing across the street, he would never be able to stop in time. It was a two-lane highway, parallel to the Interstate, and Arvius was not afraid of Luta II coming up and passing him. There was no room for passing maneuvers. Traffic was beginning to pick up already; he looked down at the light cruisers and farm vehicles snapping by in the opposite direction, and his pleasure was extreme enough to taste.

Luta II had recovered, and she came powering up to Janice's tail.

Uneasily, Arvius increased his speed. It was a terrific strain, but he couldn't stand to have Gutley so close. His eyes switched from side to side as he checked the road, and he rolled as fast as he dared without the help of the repelectric. Gutley hung close anyway, drifting, pushing Luta II's snout around to the left and ducking back in again as a unit appeared, coming on from the west.

Arvius calmly watched his adversary's sniffing tactics. Gutley's cruiser's gleaming metalwork appeared on the left, then dodged quickly back. He came out again, this time poking around on the right, dangerously near the shoulder. Arvius gave Janice a little more power. She was nearing seventy, and he didn't like it. If something went wrong, Arvius was not certain he would be able to control her. She was beginning to approach Interstate speed, and Arvius fervently wished he had the skill to let her run as fast as he knew she loved to roll.

With the addition of power, she pulled away from Luta II momentarily, and Arvius knew without looking that the black Peterbuilt was sailing right back into position. No matter how fast he was willing to run, Gutley was ready to push. Off to his left, he could see the hills which surrounded the parallel Interstate and the Gothic spires of some of the construction equipment.

Luta came venturing around on his right, suddenly, and Arvius cut down the power. He couldn't believe his eyes at first. Gutley was actually going to attempt to pass him on the shoulder. The big cruiser wheels needed traction, the sand and gravel of the shoulder offered none. Gutley was either crazy or he was a fool; Arvius didn't know what to do as he watched fascinated and horrified while the great cruiser of the Top Operator flashed its lights and began walking up along Arvius' right.

At any moment, he expected to see the big rig go careening out of control, but she didn't. Instead, she slid smoothly up, wheeling on the crumbling shoulder, now past the rear of his trailer, now half-way alongside. Arvius looked at the speed indicator. They were doing sixty. Still Gutley came on, and Arvius could see the front wheels making freaky corrections, alternately slipping and grabbing, spinning and freeing, and steadily coming on. A geyser of dust and sand boiled up behind Gutley's trailer, as the old man signaled again that he would pass.

Reluctantly, Arvius slowed down. The big frosted windows were next to his cab for a moment, and then the flatbed trailer was jouncing past. Luta II was gone. She had made it. Arvius had never seen anything like it, and he felt for the first time that perhaps he didn't de-

serve the position of Top Operator. No one but Gutley would have attempted such a maneuver. No one but Gutley would have pulled the thing off successfully. Arvius had to give the man credit, and for a few long moments, he watched the other man's cruiser rolling away, faster and faster, while Janice moved along slowly, as though she was sulking.

Then Arvius shook off his depression, and he took some more of the Road Drug. If he could keep up with Luta II on the service road, when they got back to the Interstate, with his superior acceleration, he might still have a chance. With that thought in mind, he opened the throttle, and immediately, Janice began to gain on the receding unit of John Gutley. As he pulled in close again, he realized something was very different about the way Gutley was operating. The man was doing seventy-five, then eighty, eighty-five, pushing ninety, and still accelerating. Arvius couldn't understand what it was that enabled the old man to roll like this without the repelectric, but as long as Luta II was running interference, it was all right with him. Janice could keep up all right, but Arvius worried about anyone who got in Gutley's way. He was rolling close enough to read the stenciled instructions on the wooden crates Gutley was hauling. "Lift Here," "Fragile," "This Side Up," and "Hi Valu." Arvius began to feel a little better. In spite of the fact that Gutley had shown fantastic skill in coming past on the shoulder, it was to the old man's disadvantage to run in the lead. He was only setting the pace for Arvius, and after all, Janice liked to roll fast too.

So Arvius was just beginning to regain his confidence when Gutley suddenly signaled for a left turn, and pulled around across the road before Arvius had time to react. Arvius looked off to the left as he shot by, and he saw that Gutley had found the access road and hit it at better than ninety, while Janice rolled helplessly past. Arvius shut down the engine and began to work the brakes. Gutley was gone. As he rolled to a stop and onto the shoulder, about a mile beyond the place where Gutley had turned off, he sat for a while and began to try to put the facts together.

Luta II had passed him on the shoulder. She had caught up with Janice on the Interstate. With her old Cummins diesel, she had caught up with Janice's turbined sleekness, even after being left behind back in the Kansas station. He had detected the end of the construction long before Arvius would have been able to, if he had been in the lead, and had attempted a turn at a much higher speed than Arvius would have dared without the repelectric.

All this had something to do with Gutley's innovation. Arvius

didn't know how, but it seemed as if the old man had a way to run without the repelectric. As he signaled and wheeled Janice around in a big slow U-turn which took her over to the shoulder on the far side of the road, he shook his head, and he was filled with despair. Gutley would be well along the final stretch by now. The run was all but over.

Arvius had driven Janice back onto the Interstate, watching in the viewer as her wheels did their peculiar rambling jig over the ruts and holes of the access path. Crazy Gutley had pounded over this same temporary surface at better than ninety. It seemed to Arvius that all was lost.

The Interstate was relatively empty, and the sun was up, well into the day. He opened Janice wide, and the turbine moaned as she raced along the Interstate, her computer happy to be keying on the repelectric again, on the last leg to Denver.

It was clear to Arvius that Gutley had had the help of the company with his innovation, but that was no consolation. The fact was he had lost, and the reason did not matter. He thought about the maddening little towns with their speed traps, traffic lights and detours, the little civilian cruisers that came staggering out from side roads like turtles, and it occurred to him that the company had deliberately given him this particular run, so that Gutley would have an opportunity to utilize his innovation. Arvius felt wasted. It seemed to him that everyone was against him, and he thought, *After this run is over, I should quit.* How could they have done this to him? It seemed that they had all set out to hinder him, and he was determined never to forgive or forget.

Houses began to crop up with increasing regularity. Denver. Quick blurs on the right and then the left sides of the Interstate. A line of big trees, all the houses alike. Off to the left, there was a red and white checkered water tower, and ahead, mingling with the clouds, were the mountains. So shimmery and vague. Arvius began to relax. There was no hope any more that he could beat Gutley, so why not settle down? He squinted and cranked up the viewer, not to see Luta, but to try to determine the outline of the mountains. Even with the viewer at maximum, they were but ethereal shadows, barely discernible ghosts, a purplish mass, lightening and mixing at the top so their shape, from this distance, was unsolvable.

He thought about Sid. Sid could have told him what was going on. He figured Sid had known, but the fat man hadn't mentioned a thing. Of course, he hadn't asked, but that was beside the point. A friend would have told him.

And that brought him back to Gutley. Strangely, he felt that Gut-

ley had tried to tell him in the diner, but Arvius hadn't been willing to listen. Was Gutley his only friend? Was the man he longed to beat the only person he could rely on?

Outside of Denver, Gutley was cackling with dry glee. Luta II was laughing too, it seemed, but only Gutley was aware of that. As the big black cruiser wheeled through the gates and into the yard, Gutley threw switches and flipped toggles, shutting her down in stages. She rolled to a stop by the railhead and Gutley, still laughing, was suddenly racked with an almost feverish lust to get out and drive some more. He couldn't stop laughing, and the joyous bubbling sounds in his throat were suspiciously mechanical.

Arvius was taking his time. Yawning, he picked up the manifest envelope and withdrew from it a series of celluloid overlays. Selecting one, a detail of Denver interchanges, he placed it on the table viewer. Along the borders of the map there were more detailed maps of the inner city, and Arvius listlessly watched as the blue dot which represented his cruiser moved along the transparent map. They were approaching I-S 25 South, and Janice floated off the pumice and through the series of slower lanes to the ramp. Arvius punched out the Key Signal when it came on, but he really wanted only to rest.

Outside, he could see factories now, and more houses. There was the curved concrete pillar of a drive-in theater, and then another and another. Truck stops, motels and diners flashed by too. Arvius reached for the RD, but changed his mind and put it back. What was the use? Janice was in a tight cloverleaf, and he felt the *tunk* of her automatic transmission. She whizzed around smoothly, keying fast on the repelectric, and Arvius nodded absently. He was tired and bored.

Then they were on 25 South, and Arvius shifted the celluloid map to one of the detail segments. The only sound was the *whooming* of air as it scrubbed past Janice's sleek waxed body, and the chuckle of her computer. Arvius stretched, comfortable but sad in the insulated cabin, and he thought about the possibility that he and Gutley had set a new record.

A display came up, clearing slowly on an empty viewer, and it read, "Denver yard ETA, 11:24, RMT." Arvius considered the fact that he had left Detroit at 13:15, and that had been Central Standard. Then there was the weigh station in Kansas, but that had been pretty late . . . Arvius remembered that he had decided to retire after this run, so what was the difference? As soon as the tapes from this run had been posted to

the repelectric, someone else would come along to break the record, and life went on, so what was he knocking himself out for? "What do I care about records and Top Operators?" Arvius asked himself. His only answer was the Key Signal, which popped on again. Arvius slowly punched it out, and they were ready to come off the Interstate, at Sixth Avenue.

The Denver yards were at the far end of Sixth, about four miles from Lowrey Port. Arvius rolled along the road feeling almost casually lethargic.

The terminal was a study in contrast to the confusion and dirty bustle of the Detroit yard. Here, all was clean and everything sparkled. "Neat and orderly," Arvius thought as he rolled through the gates. He tried at first not to look, but as he went past the railhead there was Luta II standing by the dock, and her two transformers were still fastened to the flatbed trailer.

Arvius felt a twinge of hope. Maybe Gutley could be beaten after all. "But no," Arvius reasoned, "he's probably just with the foreman." Any minute, he looked for the head of the Top Operator to stick up from somewhere, after getting his manifest signed. Everyone knew a run was not legally complete until the bill of lading had been accepted by the foreman. Just a technicality, but sometimes it made all the difference, like tagging a man out on a dropped third strike. Arvius tried to keep his feelings in check. There was no hope. If Gutley wasn't getting signed in, Luta II had arrived first, and he was entitled to first service.

The doors of the receiving warehouse stood open, and as Arvius halted, he could see straight through to the open doors in the back. Beyond, there was the blue sky, and the mountains. The Rockies towered suddenly close and clear, alarming in their massive, glacier-hewn detail. They looked red and brown, blue and gray, and the air, as he climbed down from the cab, seemed mountainous, as though this was the only place where the real stuff could be breathed. He took a deep breath and his lungs felt seared by the cleanness of it all, the serene yet mighty quiet.

It seemed for a moment as if there had never been a mechanized yard here. Arvius knew better, but the efficient and quiet hum and growl of the clean and simple machinery seemed harmonious enough to have almost always been here. Never the corruption and politics of the Detroit yard. Never anything but efficiency. Arvius looked down at his hand. He had forgotten he was holding the manifest. Desperately, he went in search of the foreman.

First, he walked around to the back of the trailer and broke the seal, rapping the handle sharply with the heel of his hand and pull-

ing open the doors. Occasionally, he glanced over in the direction of the railhead dock where Luta II towered, as if mocking him. The way he looked at it, Arvius had one thing in his favor: Gutley might mock him, but no one could know that he no longer cared. He looked up in the warehouse, and he could see the mundane outline of a figure walking toward him through the building. The foreman. She was silhouetted against the bright outdoor background, and Arvius saw the shadow of her hand as she waved. He returned her greeting, and he couldn't help smiling. Muntillio had always been friendly with him, and she had treated him fairly. He was glad to see her.

She came slowly out on the ramp, and she pushed her hair back from her face with a free hand. "Mornin', Arvio," she said. In her left hand she had a clipboard.

"Morning? It's about afternoon, isn't it?"

Muntillio looked around. "Oh yeah," she said. "I must have fallen asleep." She spotted Gutley's rig at the railhead, and she said, "What's with Gutley?"

Arvius could hardly believe his ears. "You mean he hasn't signed in yet?"

Muntillio shook her head. "I better go see what's up," she said, as though she regretted the necessity.

"What about me?" Arvius said. Suddenly he was eager again.

Muntillio regarded him coolly. "All in good time," she said, and her voice was even and steady. Arvius blinked as she executed a smooth hand-vault from the platform and strode off in the direction of Luta II.

Then he swung into action. He raced up into the cab of Janice, pulled her up and backed her in faster than he had ever backed a unit in before. He pulled on his gloves as he ran back to the ramp, and he dashed into the trailer, snatching the tow rope from the podium as he ran. Then, working with feverish sureness, he attached the rope to the innermost pallet, and backed slowly out, cranking down the pallet dolly wheels as he came. There was a stanchion on the platform, and he formed a coil and dropped the rope around it.

The pressure of the rope triggered the steel-colored spool-shaped device, and it began to slowly turn, extracting the pallets from the trailer. When the first pallet had rumbled out onto the platform, Arvius dropped the rope and picked up the clipboard with the manifest envelope. He withdrew an overlay of the warehouse floor plan and slid it into position over the little square in the foreman's podium. Muntillio hadn't left her stylus.

Frantically, he looked inside the podium for a spare, but there was none. Arvius was desperate. If Muntillio talked to Gutley, the old

man would have his two crates offloaded and his manifest signed before Arvius did or said anything.

A stylus. Arvius felt that nothing had ever been as important before as a stylus was then. He put his hand in his pocket at the very instant he remembered he had the stylus from the Detroit diner still there. He wasn't sure it would work, but he was certain he had nothing to lose by trying.

Without hesitation, he touched the stylus to the overlay. Immediately, there was a groan and shudder within the big building. A light came on in the overlay, and Arvius pounced on it with the stylus, drawing the extractor down through the main aisle as he had seen Muntillio and others do it, tracing a path slowly on the overlay, and looking again and again in the direction of Luta II as if by watching he could stop the action there. Muntillio climbed up along the dock, and she was cupping her hand, peering into the window.

Arvius bent again to his task. The extractor came ponderously forth, and Arvius could feel it shaking through the platform under his feet. As soon as it was under the pallet, the electromagnet switched on, and Arvius began to move the stylus back toward the warehouse door. The pallet jerked and responded, tracking the path of the gimbaled magnet below. Arvius got the pallet through the doors, lifted the stylus, and the extractor went off. Again, he went to the stanchion and took up the rope. He had begun to sweat profusely, and he peeled off his jacket, then bent again to the stanchion and pull rope. Muntillio appeared at his side. Arvius looked down at her, and he saw that she was holding Gutley's manifest.

"You signed him in?" His spirits, through so much lifting and depression in the past few hours, suddenly left him completely. Arvius felt drained.

Muntillio nodded slowly. "You better take it easy, Arvio," she said softly.

"But you had no right," Arvius complained. "He wasn't even offloaded." He knew it sounded as if he was crying, and he didn't care.

"You don't understand," Muntillio whispered. Something in her voice made Arvius bring his head up, and he faced her squarely as she went on. "You know that when there is a company connected accident or disability, the first man in gets signed if he is unable to offload?"

She made it sound like a question, but he knew Muntillio, and this was her way, sometimes, of making a statement. "Yeah," Arvius said. "And if we both pull in dead, it's a draw."

She said nothing, but stood watching Arvius carefully for what seemed a long time. Finally, he realized the truth.

Gutley was dead.

A week and a half later, Arvius was back in Detroit. "Didja hear?" Sid said, wobbly jowls all ajuggle.

"No, what?"

"Your friend Phillips. The kid beat Wrigley his first time out."

"Yeah? Well I guess that's good." Arvius settled on Sid's desk, and he sucked noisily on a toothpick. "But you should know, Sid, a man doesn't have any friends in this business."

"What are you trying to say, Arvio?"

"You could have told me something about what Gutley was up to."

Sid looked impatiently at Arvius. "They tell me you're going to retire now. Now that you're Top Operator, you wanna quit."

"You know all about everything, don't you?"

"That's right." Sid was amiable, and his voice sounded warm. "I have my connections."

Arvius rose from the desk and spread his arms. "I'll never beat Gutley," he said. "I wanted to take him while he was at his peak, and he ran circles around me with his dying breath. I'll never feel like the Top Operator, no matter what you people in the office try to tell me."

The paper workers looked up from their desks around The Tower to watch the scene. Arvius plopped back to Sid's desk. His slumping posture reflected inner disgust.

"They got you a new catalyst, Arvio," Sid purred. "A good one."

"That's nice," Arvius said, but his voice betrayed him, revealing a sincere interest in spite of his show of nonchalance.

"Yes, it is nice," Sid agreed pleasantly. "And the company has authorized me to issue you a self-unit, like Gutley's, only with a few modifications, so you won't be hurt."

"Oh no you don't!" Arvius said, waving his hands and sliding erect from the desk. "I don't need any of that new stuff."

"Well, I had to tell you, that's all," Sid replied. "Luta II goes to Phillips." The foreman made a note on something with a stylus. Arvius stood for a moment, as if he was undecided. "It's too bad," Sid prompted. "Phillips told me he's sure he could take you."

In spite of himself, Arvius was

genuinely interested. "Phillips said that?"

Sid said nothing. He'd seen it all many times before, and he knew now was the time to wait and watch the wheels turn. The office people all watched too. No one made a sound, and the telewindow was still for once, as Sid ignored his console and rummaged through one of his drawers.

Arvius took a deep breath. "All right," he announced. "I'll run against him, but I don't need any innovations and extra equipment. I'll beat him with what I have. I know Janice backwards and forwards. I can take her apart and put her together blindfolded. Phillips doesn't know as much as I've forgotten. I have more time on the road than he has in the . . . what's the matter? Why are you looking at me like that?"

Sid sighed. "If you don't know Arvio, I ain't gonna tell you."

"Whaddaya mean? Some new trick?"

"No, an old one. I thought you caught on by now, when I heard you was gonna retire, but . . ." Sid let the sentence hang and he produced one of the manifest envelopes and handed it to Arvius. "Your man is waiting in the diner."

"Are you trying to tell me I can't win? That I can't beat that punk?"

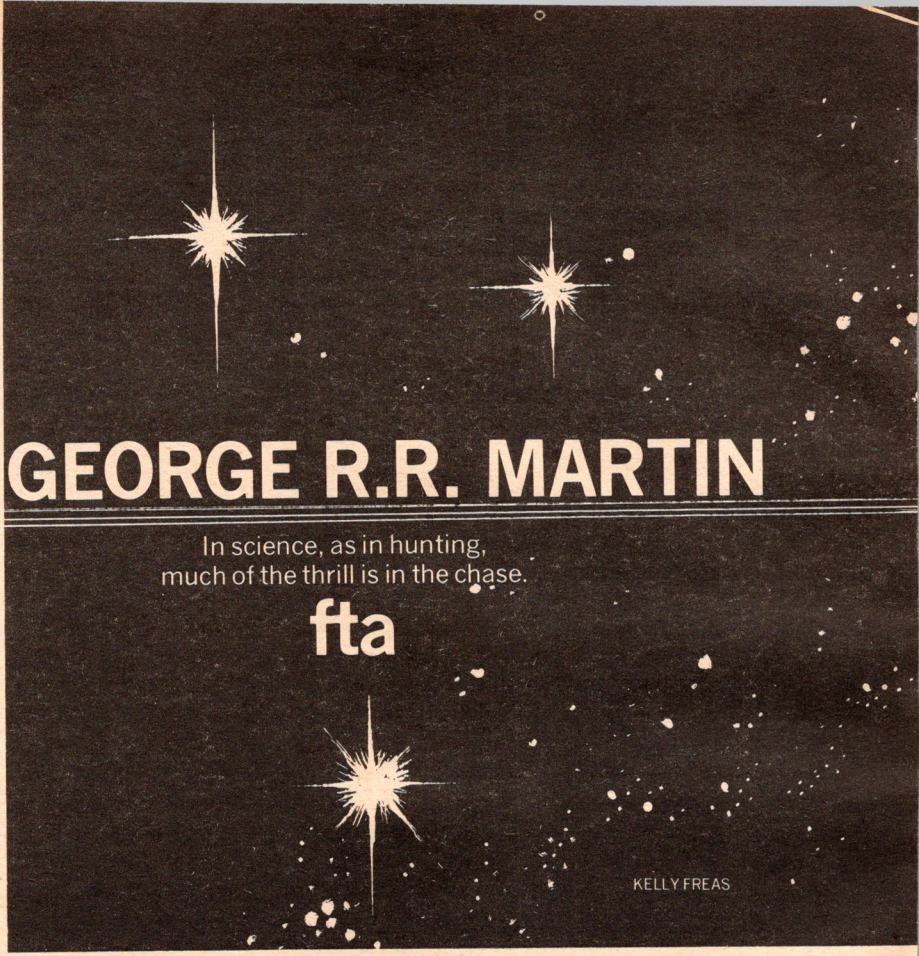
"Our money is on you this time, Arvius," Sid said, and it seemed natural that he should suddenly be speaking for the staff of the office. "But nobody wins in the long run. You'll see, you'll find out."

"You're crazy, you know that, Sid? You're really crazy." Arvius glared at the workers, and they ducked to their various machines and little tasks. "I'm going to beat Phillips, just this once, to show you I can do it, and then I'll retire."

Sid said, "Yeah, yeah," and he waved Arvius out. "I got work to do if you don't mind."

"OK, then, I'll see you." Arvius left The Tower and went down to the railhead. Sid watched him go, and when he saw in the telewindow that Arvius was not heading for the diner where Phillips waited, he grunted, and went back to his searching and scanning for fresh material from the yard.

About a quarter of an hour later, Sid saw Arvio's big turbine rig come whistling around from the shipping side of the building and go rolling out toward the gate. Sid noticed that Arvius hadn't bothered to get Janice washed and waxed as he used to after every run, but that was when Arvius had been a catalyst. Now he was the Top Operator. Phillips came from the diner, arm-waving and yelling, as predictably as a crossing guard on a model train set. Sid thought about the fact that there was nothing for any of them to do but wish Arvius well for as long as he lasted, and to relay messages from the bosses. ■

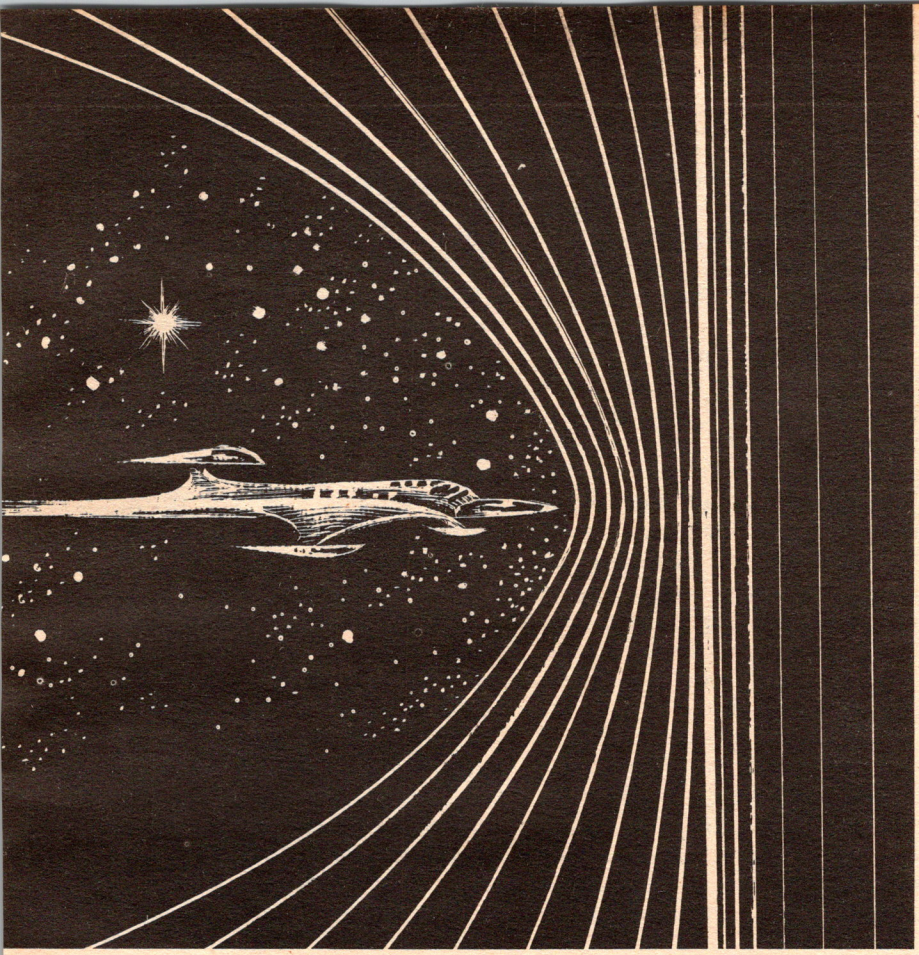


Hyperspace exists. Of that there can be no doubt. We have proved it mathematically. While we cannot know the laws of hyperspace as yet, we can be certain that they are not the laws of normal space. In hyperspace, there is no reason to suppose that the limiting velocity of light will apply. So all that remains is to find a means of moving from normal space to hyperspace, and back again. Give me the funds to find a hyperdrive, and I will give you the stars!

—Dr. Frederik D. Canferelli,
founder of the FTL Foundation,
addressing the Committee on
Technological Assessment,
World Senate, Geneva,
May 21, 2016

EVERYONE KNOWS AN ANT CAN'T MOVE A RUBBER TREE PLANT

—Motto of the FTL Foundation



Kinery entered in a rush, a thick file bulging under his arm. He was an aggressive young man, with short blond hair and a spike beard and a no-nonsense manner. He showed no deference.

Jerome Schechter, the deputy director of the FTL Foundation, watched through tired eyes while Kinery sat down without invitation, and slammed his file onto Schechter's cluttered desk.

"Morning, Schechter," Kinery said curtly. "I'm glad I finally broke through your palace guard. You're a very difficult man to get to see, you know that?"

Schechter nodded. "And you're very persistent," he said. The deputy director was a large man, layered in fat, with heavy eyebrows and a shock of thick gray hair.

"One has to be persistent in dealing with you people. Schechter,

I'm not going to waste words. I've been getting a run-around from FTL, and I want to know why."

"A run-around?" Schechter smiled. "I don't know what you mean."

"Let's not play games. You and I both know that I'm one of the best damn physicists to come along in many years. You've seen my papers on hyperspace, if you keep up with your specialty at all. You should know that my approach is valid. I've given the field its biggest kick in the pants since Lopez. And he was thirty years ago. I'm on the track of a hyperdrive engine, Schechter. Everybody who knows anything knows that.

"But I need funding. My university can't meet the costs of the equipment I need. So I came to the FTL Foundation. Damn it, Schechter, you people should have been overjoyed to get my application. Instead, I get a year's worth of stalling, then a turndown. And I can't even get an explanation out of anyone. You're always in conference, your assistants hand me doubletalk, and Lopez seems to be on a permanent vacation."

Kinery folded his arms and sat back in his seat stiffly. Schechter played with a paperweight, and sighed. "You're angry, Mr. Kinery," he said. "It never pays to get angry."

Kinery leaned forward again. "I have a *right* to be angry. The FTL Foundation was set up for the express purpose of finding a hyperspace drive. I am about to do just that. Yet you won't even give me a hearing, let alone money."

Schechter sighed again. "You're working under several misapprehensions. To begin with, the FTL Foundation was created to research a method of faster-than-light travel. A star drive, let us say. Hyperspace is only one avenue toward that end. Right now, we're pursuing other avenues that look more promising. We . . ."

"I know all about those other avenues," Kinery interrupted. "Dead ends, all of them. You're wasting the taxpayers' money. And my God, some of things you're funding! Allison and his teleportation experiments. Claudia Daniels with her nonsense about an esper-engine. And Chung's time-stasis hypothesis! How much are you giving *him?* If you ask me, the FTL Foundation's been mismanaged ever since Canferelli died. The only one who was going in the right direction at all was Lopez, and you loons took him out of the field and made him an administrator."

Schechter looked up and studied his guest. Kinery's face was a trifle flushed, and his lips were pressed tightly together. "I understand you've been to see Senator Markham," the deputy director said. "Do you intend to bring these charges to his attention?"

"Yes," Kinery said sharply. "Un-

less I get some answers. And I guarantee you that if those answers don't satisfy me, I'm going to see to it that the Senate Technology Committee takes a good long look at the FTL Foundation."

Schechter nodded. "Very well," he said. "I'll give you your answers. Kinery, do you have any idea how crowded Earth is right now?"

Kinery snorted. "Of course, I—"

"No," Schechter said. "Don't brush it off. Think about it. It's important. We don't have any *room* left, Kinery. Not here, not anywhere on Earth. And the colonies on Mars and Luna and Callisto are jokes, we both know that. Man's in a dead end. We need the stars for racial survival. The FTL Foundation is the hope of mankind, and thanks to Canferelli, the public sees the Foundation only in terms of hyperspace."

Kinery was not appeased. "Schechter, I've gotten enough bull from your staff during the past year. I don't need any from you."

Schechter just smiled. Then he rose and walked to the window, to look out on the sky-crowding towers of the megalopolis around them. "Kinery," he said without turning, "did you ever wonder why Lopez has not funded a hyperspace research project since he became director? After all, it was his field."

"I . . ." Kinery began.

Schechter cut him off. "Never mind," he said. "It isn't important. We fund the crackpot theories that we fund because they're better than nothing. Hyperspace is the dead end, Kinery. We keep the myth alive for the public, but we know better."

Kinery grimaced. "Oh, come now, Schechter. Take a look at my papers. You give me the funding and I'll give you a hyperspace engine within two years."

Schechter turned to face him. "I'm sure you would," he said, in a voice infinitely weary. "You know, Canferelli once said there was no reason why the limiting velocity of light should apply in hyperspace. He was right. It doesn't.

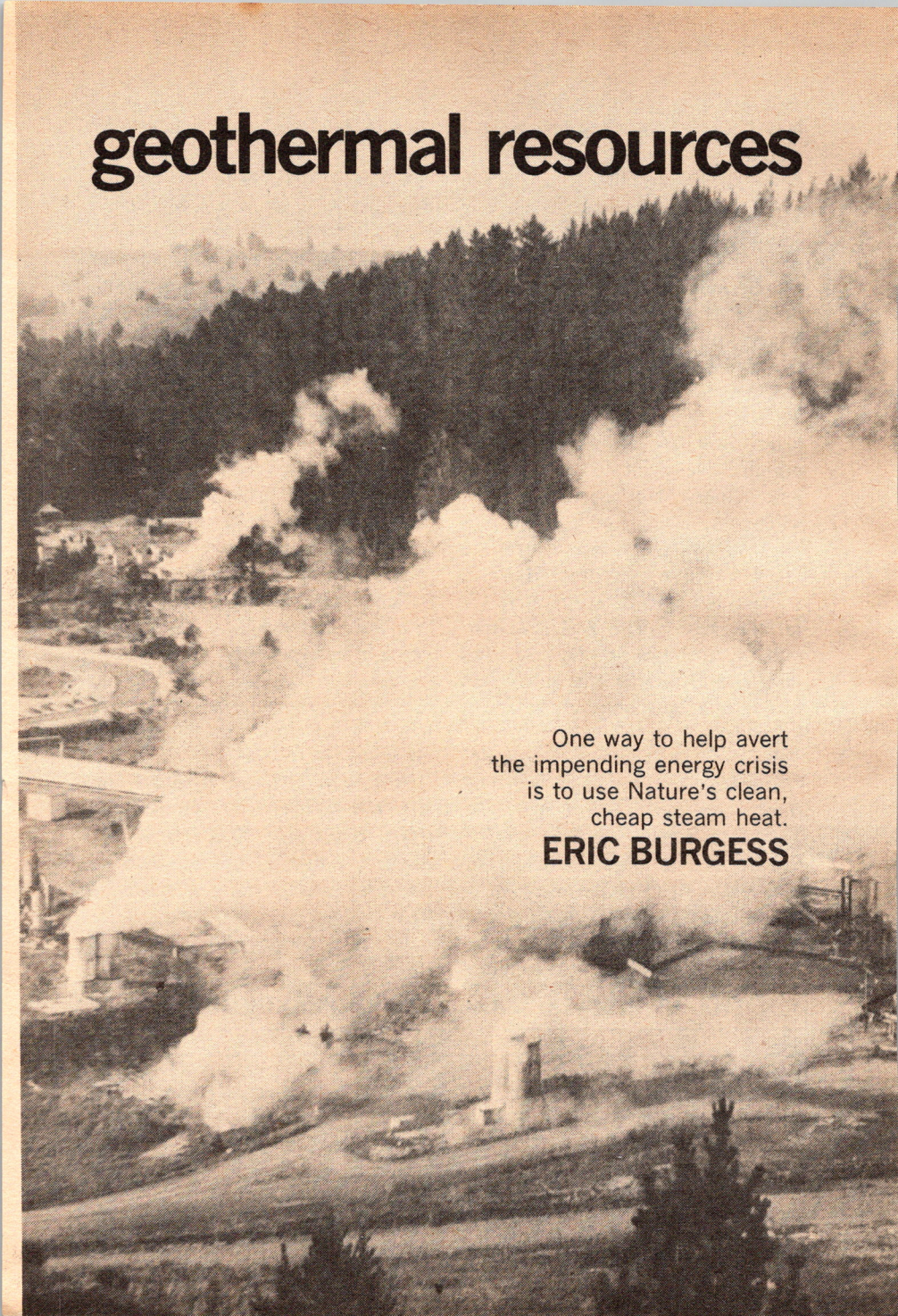
"I'm sorry, Kinery. Really I am. But Lopez gave us a hyperdrive thirty years ago. That's when we discovered that the limiting velocity in hyperspace is not the speed of light.

"It's slower, Kinery. It's *slower.*" ■

THE ANALYTICAL LABORATORY/FEBRUARY 1974

Place	Title	Author	Points
1.	Wet Blanket	P.J. Plauger	2.15
2.	Earth, Air, Fire and Water (Pt. 1)	Stephen Nemeth and William Walling	2.37
3.	A Bonus for Dr. Hardwick	Brian C. Coad	3.22
4.	A Mind of His Own	Joe Haldeman	3.45
5.	Violence on TV	Glenn L. Gillette	4.16
6.	The Amphibious Cavalry Gap	James E. Thompson	5.40

geothermal resources



One way to help avert the impending energy crisis is to use Nature's clean, cheap steam heat.

ERIC BURGESS

Today mankind faces an energy crisis largely because full use has not been made of abundant energy available from many different sources. Locked for decades into easily exploited fossil fuels, we must soon break loose and develop alternative sources of energy to satisfy present, let alone future, world demands.

One of these abundant sources of energy is the internal heat of the Earth. So far this has been tapped in minuscule amounts for space heating and spas and to generate relatively small quantities of electric power. Although geothermal heat is by no means the solution to the world's energy problems, it does offer great potential as a major supplement to other energy sources.

And until mankind harnesses fusion power all these other energy sources should be developed. Otherwise the future will be darkened by brownouts and blackouts and energy rationing.

Most of the western states of the US possess geothermal potential. Some experts claim geothermal energy can supply 20 percent of US energy needs by the end of the century if an all-out exploration and research and development program is started now. Other estimates are less optimistic. Stanford Research Institute estimates 5,000 Megawatts for the whole of California. A recent California Public Utilities Commission report expects only 1,000 additional geothermal Megawatts by 1981 and another 1,000 by 1991. But a University of California report says that in the Imperial Valley alone there could be 30,000 Megawatts potential.

The reason for the varied estimates is lack of detailed exploration. Yet a RAND report, "California's Electricity Quandary," states: "To the extent these resources exist in sufficient quantity, they offer an inexpensive and relatively clean source of bulk electric energy for California beginning in the 1980's."

At present, geothermal energy produces about 900 Megawatts of worldwide electric power, slightly less than the output of one typical nuclear station. But global estimates are that the known fields, excluding those in the USSR, could produce at least 30,000 Megawatts when developed.

The table at the top of page 58 lists the present production, together with estimates of potential.

A United Nations worldwide survey reveals geothermal potential in many countries. Development is planned at El Tatio, Chile (20 Mw); Guadeloupe, French West Indies (30 Mw); Legaspi, Philippines (10 Mw); Tatun, Taiwan (200 Mw); and Kizildera, Turkey (30 Mw). Potential is also being further investigated in Algeria, Bulgaria, Colombia, Czechoslovakia, Ecuador, Ethiopia, Fiji, Greece, Guatemala, Hungary, Indonesia, Kenya, Morocco, Nicaragua, Poland, Spain,

Eric Burgess' photo shows a producing steam field at Wairakei, New Zealand.

PRESENT GEOTHERMAL POWER OPERATIONS

	Present Mw	Future Mw (est.)
Italy	390	1,600
New Zealand	170	500
US	193	20,000
Mexico	75	1,000
Japan	33	8,000
El Salvador	30	100
USSR	6+	unknown*
Iceland	3	100

* Soviet geothermal experts predict that geothermal power will provide the major portion of Soviet electricity in the coming years.

Tunisia, Venezuela, and Yugoslavia.

Some of these countries already use geothermal energy for space heating. Hungary, for example, has 90 drill-holes in southern provinces supplying hot water for apartments, industry, and agriculture. Hundreds of thousands of acres of greenhouse area are being serviced at less than one-third the cost of coal-fired heat.

Iceland approaches serving 60 percent of its population with heat from geothermal waters.

In the US low-temperature geothermal heat has been in use for many years at Klamath Falls, Oregon; Imperial Valley, California; Boise, Idaho; Pagosa Springs, Colorado; and at innumerable hot springs.

Both economically and environmentally, geothermal heat looks good, even though it cannot provide all the energy needed to meet mankind's demands. Yet it is very slow in getting into the energy pipelines. Fundamentally the delays are institutional and regulatory rather than technical. The technology of geothermal energy utilization has already become well established. Power has been produced at Larderello, Italy since the early days of this century.

One of the greatest hold-ups to development in the US is caused by Federal procrastination in opening public lands to geothermal exploration. Most of the known geothermal resources are beneath these public lands. Yet three years after the Geothermal Act of 1970, no Federal leases have yet been granted to explore, let alone develop, these extensive geothermal resource areas. All geothermal resources so far being developed in the US are on state or private land.

Here's what needs to be done, and done fast, if John Q. Citizen is to have the benefits of geothermal power much before the end of the century:

1. Catalog the resources by opening exploration of Federal land.

2. Develop ways to use the resources more effectively through better power generation systems for low-temperature fluids.

3. Eliminate state and local regu-

latory, and general legal, obstacles to geothermal development.

4. Provide encouragement to utilities for them to share the cost of exploration for geothermal resources.

The Geothermal Resource

A geothermal resource exists where internal heat from the Earth is concentrated closer to the surface than is normal, where it can be tapped to drive steam turbines and produce electricity, used to desalinate water or for space heating (or cooling), and to process agricultural and other products. Geothermal heat, applied directly, avoids frost damage to crops. In the more distant future it will warm soils and modify the natural growing season of some agricultural areas where soil temperatures have more effect on yields than does air temperature.

Geothermal energy for these activities comes from deep within the Earth. Wells drilled into the crust reveal that temperatures increase with depth probably to a maximum central temperature of about 7,000 degrees Fahrenheit. However, high temperatures are generally too deep to be reached on an economic basis with current technology.

Worldwide, the flow of internal heat to the Earth's surface amounts, on the average, to 1.5 heat flow units; one hfu being about one-millionth of a calorie per square centimeter per second. This rate of heat flow is relatively small—in the absence of losses it would take this quantity of heat about three years to bring a half-inch layer of water to a boil from room temperature. By contrast, the heat flow from the sun to the surface of the Earth would take on the average only one hour to bring the same layer of water to the boiling point. Thus the outflowing heat from the Earth's interior is thousands of times less than the incoming heat from the sun.

However, to use solar energy it must be concentrated, usually by mirrors, thereby leading to a major capital investment. Geothermal energy is naturally concentrated in places by the geologic structure of the Earth's upper crust. All that has to be done is to find these places and extract and process the heat. Capital costs to use geothermal energy are much less than to use solar energy, but exploratory costs are very much greater. Both forms of energy must be exploited to supplement fossil- and nuclear-fueled power plants.

Types of Geothermal Resources

There are four main types of geothermal resources where the heat flow is accumulated and concentrated. In some of them the local heat flow is ten times greater than the world average.

A dry rock geothermal system is where the rocks are hot but dry. To extract this geothermal heat, water

must be injected into the hot rock. The water absorbs the heat from the rocks and is then transported to the surface through drill-holes either as hot water or steam or both. The hot rock must be fractured in some way, for example, by nuclear explosions or the action of cold water injection, to provide sufficient heat exchange surface area. So far no dry rock systems have been developed anywhere in the world.

The second type of system occurs where rocks are hot, naturally fractured or otherwise permeable (*e.g.*, sedimentary), but contain only a relatively small amount of water and are capped by an impervious rock layer. In this vapor-dominated or dry-steam system sufficient heat is absorbed by the water for it to flash into steam underground. At some fields faults penetrate the impervious cap and vent steam to the surface naturally. The escaping steam in many instances was the signal for entrepreneurs to try to develop the resource.

A geothermal system of this kind, of which several are in operation today, is developed by drilling wells so that the steam can be collected and piped to a generating plant. First practical application of geothermal power in this way was at Larderello, Italy early this century. More recently The Geysers field was developed in northern California. This later geothermal field is expected to be producing 1,000 Megawatts before 1980, as much as a typical nuclear power plant.

Elsewhere in geothermal areas great volumes of hot, permeable rock hold so much water that there is no steam underground. Although the deep water is at high temperature it is kept from boiling by the hydrostatic pressure of the cold water above it. This third type of geothermal system is a liquid-dominated or wet-steam system. Its development consists of drilling wells to relieve the pressure so that some underground water can flash into steam and push a mixture of steam and hot water to the surface.

Water-dominated systems are more difficult to develop because the water is usually a corrosive brine which has to be separated from the steam to allow electric power production. The brine corrodes pumps and other machinery and must be isolated from the turbines. Geothermal installations at Wairakei, New Zealand; Parantunka, USSR; and Cerro Prieto, Mexico are examples of water-dominated systems.

About one percent of the heat stored in the geothermal reservoir of a water-dominated system can be extracted and converted into electricity compared with between two and five percent for a vapor-dominated system.

In the Imperial Valley of California there is great potential from water-dominated systems, possibly as much as 30,000 Megawatts, but

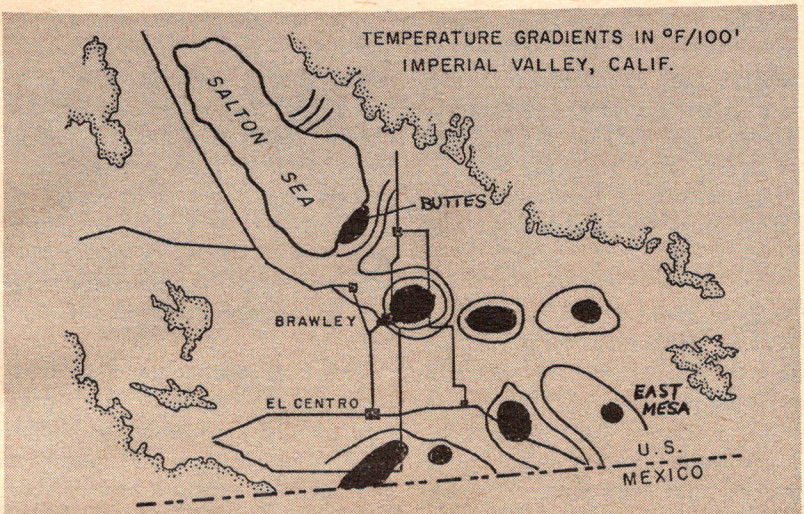


Figure 1: Geothermal hot spots (anomalies) mapped by University of California, Riverside, in the Imperial Valley of southern California.

at least 3,000 Megawatts. A combination of hot magma relatively close to the surface and a rifted valley filled with sediments and water from the Colorado River, provides a ripe geothermal plum awaiting development (see Figure 1). Currently oil and utility companies and the Federal Bureau of Reclamation are active with well-drilling and pilot-plant operation for an expected geothermal bonanza.

Throughout the tectonically active western states other geothermal areas abound, mostly on Federal land. They represent large reserves of both energy and water. Since they are also predominantly in desert areas these reserves have significant potential to make the western deserts bloom.

A fourth type of geothermal resource consists of underground reservoirs of hot water which is not hot enough to flash into steam even when hydrostatic pressures are relieved. Such low-temperature water systems have been developed for space heating and health spas all over the world. They cannot be used for power production because of the inefficiency of converting low-temperature heat into electricity. Efficiency is governed by the difference in temperature between the heat entering the generator and the waste heat rejected by it in ac-

cordance with the well-known Carnot equation of thermodynamics. Breakthroughs are needed to utilize these low-temperature geothermal resources which are so plentiful everywhere. One possible breakthrough may be a binary-fluid system which is discussed later in this article.

Energy Conversion

Power production from a geothermal resource involves relatively straightforward application of known processes. The basic concept is the same as for other heat sources, and conventional steam turbines drive conventional electric generators.

In a vapor-dominated system, the steam is used directly as it comes from the well via traps that filter out any solid particles being carried by the steam. In a water-dominated system the steam is separated from the water by a centrifugal separator which removes all but one-tenth of one percent of the liquid. But when the hot geothermal fluid is flashed to steam its high chemical content leads to supersaturation of the brine and the deposit of dissolved chemicals. These deposits foul lines and machinery and add to maintenance costs.

One of the most recent innovations in geothermal energy conversion is the binary-fluid system now being tried out in pilot installations in the US and the USSR. In a binary-fluid system (see Figure 2) the geothermal fluid flows from the well and is maintained at high pressure. Since it is not flashed into steam it keeps its dissolved solids in solution. The hot brine is passed through a heat exchanger where part of its energy is transferred to a second working fluid such as freon, or preferably, isobutane. It is this secondary fluid that is expanded through the turbine.

The heat exchanger acts as a boiler for the isobutane. After passage through the turbine the isobutane is condensed and pumped back to high pressure and cooled. Then it passes back to the heat exchanger to repeat the cycle. Because this working fluid has heavier molecules than water, the power turbine is more compact and efficient than a steam turbine.

After passage through the heat exchanger the geothermal brine is pumped back underground. Thus the binary-fluid system replenishes the underground water and only extracts heat from it. Since the isobutane also flows in a closed cycle the only environmental effect of a binary-fluid system is the discharge of waste heat from its cooling system.

All power generation systems have to be cooled to reject waste heat at the low-temperature end of the thermodynamic cycle. Atmospheric cooling circulates atmospheric air past a radiator. This method avoids use of cooling water

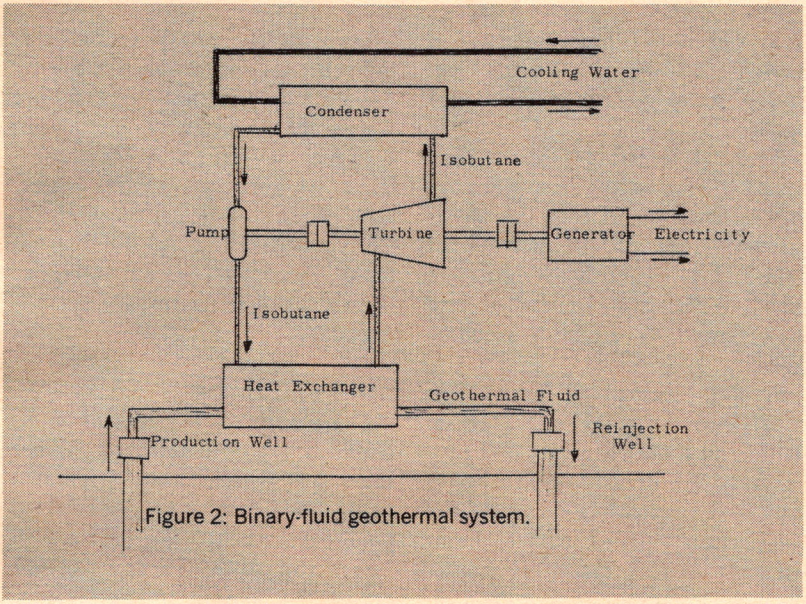


Figure 2: Binary-fluid geothermal system.

but the radiator is relatively inefficient and is expensive to construct. The system is also not suitable for use in hot desert climates.

A wet cooling system circulates water through a lattice-like construction. Droplets of water evaporate and extract heat thereby. This cooling system consumes large quantities of water but requires much less cooling area than a dry cooling system, so it costs less. Moreover, the water can be derived from the geothermal fluid itself if the whole of this fluid need not be reinjected.

A third type of cooling uses natural water from lake or river to cool the geothermal fluids. However, such natural water is not available in desert areas where geothermal resources seem most plentiful. Its importation adds to the cost.

Cost of power production from geothermal steam is less than seven mills per kilowatt hour, even with importation of water for cooling and for reinjection to keep the reservoir charged. This compares very favorably today with electricity costs from fossil- or nuclear-fuel power plants. But with escalating costs of fossil fuels, geothermal electricity will become much cheaper than other electricity in the coming years.

Steps to Geothermal Field Development

There are four main steps to developing any geothermal resource,

from the initial recognition of a KGRA (Known Geothermal Resource Area) to commercial production.

Resource assessment comes first. It calls for an extensive exploratory drilling program to map the physical properties of the geothermal field and to establish the heat flux there. Wells must be drilled and then flowed to establish resource capacity.

Second, technology application consists of systems engineering, steam and brine chemistry and processing, material compatability tests, and engineering design of the components, such as items of hardware to extract electrical power from the steam, or to use the heat energy of the geothermal brine to desalinate part of the brine.

Next, systems analysis and cost benefit studies plan the orderly development of the geothermal resource, and specific ways are selected to use the resource and to obtain support at Federal, state, and local levels and from industry and other consumers in the area. Detailed design, procurement, construction, and operation follow in succession.

In most applications all these steps have been undertaken by government agencies, and progress has been relatively quick once the go-ahead decision was taken. This is because government agencies were able to make the long-term investments without immediate return, whereas private enterprise finds this difficult. Another problem faced by private enterprise is that of cutting across the disciplinary boundaries between several different industries—oil and gas, power, water, and mining. For geothermal resource utilization in the United States, there is no private enterprise equivalent of the aerospace systems manager.

Barriers to Progress

Despite the relative lack of abundance of vapor-dominated fields—there are twenty water-dominated fields for each vapor-dominated field—such a field is the only one in operation today in the United States. It is located at The Geysers, in California.

Even there it was a relatively slow process bringing geothermal power production from theory into practice. A first attempt was made in the early 1920's but failed because demand for electricity in the area was too small. About fifteen years ago new wells were drilled and copious quantities of steam produced.

But the wells had to flow successfully for sufficient time to establish the longevity of the geothermal reservoir before a utility company could commit itself to construction of electric power generation facilities there.

Longevity of a geothermal resource is very important to its development, since the capital invest-

ment for a generating plant has to be amortized over a long period. A power company requires a minimum lifetime of 30 years on its generating facilities, and because a geothermal facility has to be installed where the geothermal resource is located—unlike fossil- or nuclear-fueled plants to which fuel can be transported—the life of the geothermal field must be at least 30 years also.

This 30-year lifetime, plus a 10-year lead time on plant site approval and construction, presents a major impediment to resource development. It contrasts greatly with development of oil and gas resources, in which resources are found and then used as quickly as possible. These fuels are easily transportable. Once an oil or gas well produces, a tanker can roll up and carry away the oil, or the gas well can be connected to the nation's pipelines. By contrast, geothermal fluids cannot be transported more than a few miles from the wellhead.

The amortization period thus governs the acceptable rate of depletion of a geothermal field, thereby calling for more stringent controls on the utilization of the field.

At The Geysers the system was optimized to utility company economics rather than those of the producer or the consumer. But normal utility economics will have to be revised if full use is to be made of the nation's geothermal resources. The system should be optimized as a complete energy system with the consumer in mind.

A major technical problem today is how to measure longevity when the physical characteristics of geothermal fields are imperfectly understood to begin with. Oil field computer models have been adapted to geothermal fields with some success. But more analytical work is needed before there is a satisfactory computer model of geothermal reservoirs in general.

Seeking quantitative information about The Geysers field stretched out the development process there, and may do the same at other geothermal areas. What is required immediately is a stepped-up exploratory drilling program. But drilling costs money—lots of money. Moreover, well-speculation is hard put to find funds because of the long time lapse between a well shooting steam into the air and some utility company paying for this steam to be delivered to a power plant. A single well is also useless. It must be backed up by other producing wells in the same field to justify a utility company investing in a 50-to-100-Megawatt plant there.

Thus the economics of in-depth exploration of geothermal fields today leaves much to be desired. Wildcatting is by no means profitable or popular.

Another brake acting on geother-

mal development is the fact that the separate aspects of geothermal resources are controlled by different statutes and local regulations. Geothermal resources consist of a gas (steam), water, and minerals. In many western states these are each regulated by a different department or division of state government, with different rules and regulations. In addition, different types of geothermal fields may have different taxation breaks. The Geysers field was granted a tax depletion allowance on the basis that it is a depletable gas field. On the other hand, a water-dominated field is very likely to be denied such a tax break, especially if it should be a rechargeable field, naturally or otherwise.

Additionally, there are great differences between gas, water, and mineral ownership and rights which further complicate the issue at both the Federal and the state level. But the major hold-up has been that the Federal government has so far not granted any geothermal leases on Federal land despite the Geothermal Act of 1970 allowing it to do so.

In some states any lessee is permitted to deplete a common resource as fast as he can without regard to the rights of others. Then a mad scramble erupts to exploit the resource as rapidly as possible. Elsewhere, the rights of all other sharers of a common basin have to be respected. Depletion of the resource must then meet stringent control standards aimed at common benefit. And there are strict differences between water, gas, oil, and minerals that are unresolvable at present from the geothermal standpoint.

Geothermal Water

Water-dominated geothermal resources, of which there are many in the western states, offer a considerable potential of desalinated water because the geothermal fluids contain sufficient heat energy to bring them to the surface and desalinate them. In the Imperial Valley it is estimated that there may be as much as one billion acre-feet of recoverable water.

Ocean water, by contrast, has to be supplied with heat for desalting. And since—after the initial capital investment in the desalination plant—energy is the costly on-going factor in water desalination, geothermal fields are getting increasing attention from developers of arid regions worldwide.

The main interest in the United States is by the Bureau of Reclamation, whose first production well recently spouted steam and hot water over the desert of the East Mesa in California's Imperial Valley, not far from Yuma, Arizona. The Bureau of Reclamation expects to have a pilot Envirogenics desalination plant producing potable water from the well this year.

The ultimate aim is a desalina-

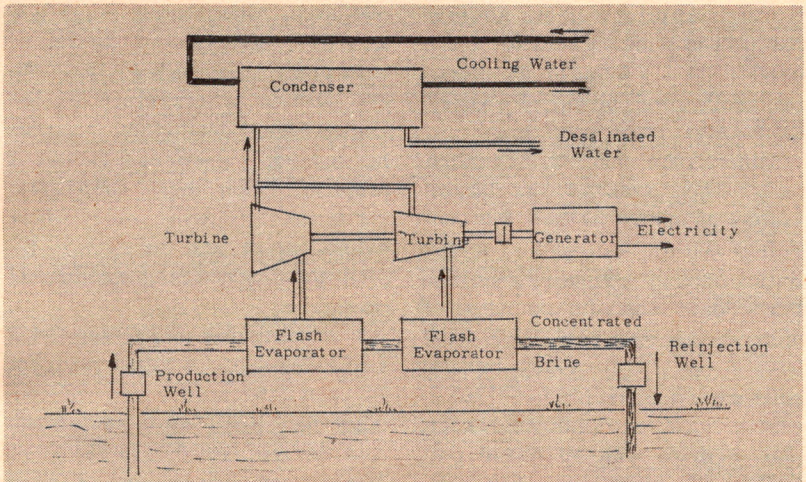


Figure 3: Combined water and electric power producing geothermal plant.

tion project spread over the Mesa, extracting millions of acre-feet of water annually to replenish the Colorado River. As of now the river's waters have been overcommitted by Congress, and those waters reaching Mexico are still very short of treaty obligations in quantity and quality. Desalting geothermal water seems to be the only way to rescue the river from its trouble and bring the needed water to the Southwest, the Central Arizona Project, and to Mexico.

Desalinated water is comparatively expensive compared with other water sources when these are available. This is particularly true for agricultural use. Logically, water and power should not be priced separately, but the two should be produced and priced together as a combined system. Then both water and power would be priced competitively without giving a large price advantage to power alone (see Figure 3). And geothermal water might be applied directly in sophisticated trickle irrigation systems instead of the flood irrigation practiced today. The availability of water, and not acreage, is the limit to development of agriculture in arid zones.

Other Uses

Geothermal heat can be applied directly in agro-industrial complexes. Such have already been proposed for the development of desert areas of Israel, particularly to revitalize the Arava region

through application of nuclear power. The same idea could be applied in the US by using the plentiful geothermal power. However, there are no plans to do this.

Minerals are plentiful in geothermal brines. One of the largest sources of lithium in the US is contained within the brines of the Buttes field in southern California. But to date successful extraction of minerals has only been on a small scale in the US. Generally, mineral costs exceed market price. That is why a local agro-industrial complex, perhaps with an inland port facility, may make geothermal minerals more attractive commercially. Railroad electrification, long overdue in the US, might be implemented through geothermal energy sources and used to obtain cheaper transportation of minerals also.

Environmental Aspects

Geothermal power is relatively clean power. No power production can be intrinsically pollution-free. Each affects the environment in some way. But the total effects from geothermal power are very small. Chief problems today are noise of steam venting, waste heat, and noxious gas emissions.

One effect geothermal resources utilization may share with mining or extraction of other fossil fuels, is the possibility of land subsidence. But this can be minimized by reinjection of fluids into the geothermal reservoir. The brine itself can be reinjected. Alternatively, ocean water may be imported for injection.

In many areas such as the western deserts, where much of the United States' geothermal resources lie buried, subsidence is not a problem. Often these same areas are tectonically active zones where natural uplift and subsidence exceed that expected of geothermal operations.

It is calculated that to support a 1,000-Megawatt fossil-fuel plant for 30 years, 100 million tons of coal must be mined and transported. And the resultant fly ash has to be disposed of. For a nuclear plant about four million tons of ore have to be processed and radioactive wastes disposed of. These processes have major environmental effects that are missing in geothermal power.

The major environmental problem is control of hydrogen sulfide emission. Not only is this odoriferous gas unpleasant to people—though apparently not to animals—but it also corrodes electrical contacts. Research is under way to solve the problem. Fortunately, not all geothermal fields produce hydrogen sulfide.

In the final analysis, geothermal resources are not a panacea for world energy problems. Yet more and more of the barren western deserts must quickly display the steam plumes from miles underground as developers bring wells into production if utility companies

are to phase in their geothermal facilities in the 1980's to meet the expected energy demands of the nation.

Geothermal exploration now needs encouragement from Federal, state, and local levels, to make geothermal energy utilization a more attractive investment for private enterprise capital. ■

ABOUT THE AUTHOR

Eric Burgess is a former staff correspondent for *The Christian Science Monitor.* He recently completed a study of the geothermal resources of the Imperial Valley for California's Joint Committee on Public Domain. A founder of the British Interplanetary Society and the International Astronautical Federation, he also wrote one of the first technical treatments about unmanned communication satellites (1949), and participated in the decision for Pioneer to carry a message to intelligences beyond the solar system.

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JOHN T. PHILLIFENT

Success in the business world depends on not getting caught.

owe me

Conway Morriss sagged back in his managerial chair and contemplated the forthcoming interview with considerable distaste. A glance at the digital wall clock showed him 10.14.50. He promised himself a clear fifteen minutes out of a very full morning to finding out why, at least. A discreet chime interrupted his train of thought, heralded his secretary's voice.

"Mr. Smith is here, Mr. Morriss."

Morriss scowled. "Very well, Hilda, send him in, and no more in-calls until I say."

The door murmured open, clicked shut again. Smith came across the tread-deadening carpet to halt and stand, casually erect in front of the desk, meeting the manager's irritated stare with a calmness that hinted of underlying amusement and curiosity. For a long moment there was nothing said, Morriss taking the opportunity to study Smith all over again. A tall man, lean and loose-jointed, almost gangling, yet with an aura of self-confidence that went well with his rake-hell hair-style, eagle-beak nose, and cool gray eyes retreating into shadow under a cliff-like brow. It was a face full of character, yet the man was little better than a janitor, a night watchman, even if the post was overdignified with the title of security guard. An important post all the same. Morriss Micro-Modules had plenty of stuff to tempt a certain type of intruder.

"You wanted to see me, Mr. Morriss?" Smith sounded idly curious.

"I wouldn't say I *want* to see you, Smith." Morriss shook his head. "I have little choice, seeing that I, personally, hired you in the first place. I'm not in the habit of passing the buck, but I tell you frankly I am not looking forward to this, nor to what I shall have to do immediately afterwards." He saw Smith's inquiring look, and jabbed at the folder on his desk. "I have your personnel file here, naturally, and heading it is a letter, a personal letter to me from Harvey

Bander, recommending you. Harvey's a good friend of mine, as well as being in a similar line of business. So again I have little choice. Either that letter is an arrant forgery, or you somehow managed to fool Harvey into trusting you. Now that you've been caught I have to ring and tell him. Warn him. But before I do that I have to deal with you. The truth. Sit down."

Smith looked for a chair, adjusted it, sat, and the submerged curiosity was plainer on his face now. "I reckon you will ring Harvey Bander when we're through here, Mr. Morriss, just to set your mind at rest, but you won't surprise him at all. He knows me pretty well."

"Does he know you're a common thief? At least? Or possibly something a lot worse, an industrial snoop?" Morriss meant to keep his voice controlled but the mere thought of an outsider prowling through his files and records made his blood pressure and voice rise. In the gadgetry business fortunes can be made and lost on exclusive know-how. Smith smiled now, not unkindly.

"We can wash out 'thief', at least," he suggested mildly. "The records don't show anything missing that I took. As for the other thing, that could be harder to disprove, but maybe we'll get to it. Just what did Stoltz report to you, anyway?"

"How did you know it was Stoltz?" Morriss felt belated caution. Smith didn't even begin to look like a guilty man caught out. "Not that it matters," he resumed, "since you've as good as admitted . . . what the devil are you doing?"

Smith had risen to his feet smoothly and was holding a small something he had taken from a hip-pocket, aiming it slowly around the office. "Just making sure we're not bugged," he said, and Morriss snorted.

"*This* interview is not being recorded, believe me."

"I do. There's one mike in your left-hand drawer, one in the intercom, one in the terminal console, and one over there in that wall-unit, but they're all inert right now. That's all right. It's the nonofficial ones, that you might not know about, that I'm looking for." Smith completed a careful full revolution, shrugged, and nodded. "It's all right. Nothing here."

Morriss snorted again. "What are you trying to pull? A gadget that small that could sweep a room this size that easily . . . is strictly from TV fantasy. You have your nerve, trying that kind of bluff on me, of all people."

"No bluff. This works. I made it myself." Smith sat again. "We can get to that later. Tell me about Stoltz's report."

Morriss, fighting the feeling that he was the interviewee rather than the other way around, shuffled a sheet of paper where he could

glance at it for reference.

"No need to quote the exact words. In essence, it was Stoltz's shift after yours. He made his rounds conscientiously. He found doors open, drawers open, files open, terminal readouts left switched on . . . where they had no business to be. In places where he isn't allowed to be himself. Nor any security guard. Except in an emergency. And none was registered. So he made report to that effect. It had to be you, or some confederate you let in. Snooping into things and places where only myself and three other prople have any rightful access!"

"That's fair," Smith admitted. "Of course, he wouldn't know if anything had been taken."

"Right. *I* won't know until Ratcliffe has finished checking. But don't get any notion that will let *you* off the hook!"

"Did Lem Stoltz offer any reason why I would be so dim as to leave things that way for him . . . or anyone else . . . to find?"

"Not his place. But he did suggest that perhaps you were smart enough to be able to open all those off-limit restrictions, only you didn't know how to shut them up again."

"It's a thought. He's a good man, Stoltz. One of the few who checks everything he's supposed to, not like some who do a once-around quick and forget it. You'd do well to keep him on."

"Now see here!" Morriss felt it was time he got back on top again. "Are you suggesting this was all a deliberate plan of yours?"

"Just that. It's been reported, and here I am, in disgrace. Weren't you just a little bit surprised that I checked in this morning all normal? To fit your picture I should have been a hundred miles away by now. Incidentally I can open, and shut, any door, drawer, lock, cabinet or store-room in this establishment, Mr. Morriss. In fact I have been doing just that every night shift in the three months I've been here."

"My God!" Morriss felt sweat start on his face. "And you think you can con me into believing that you're *not* into industrial espionage! You must take me for a full-marks fool!"

"Maybe I do, in a way. I take you for an honest man anyway, and that can come close to the same thing, sometimes."

"Why don't I pick up this phone," Morriss growled, "and call the law right now, and have you put away?"

"Couple of reasons. One, you don't want that kind of publicity. Two, you'd have a job thinking up a charge that would stick. Let me give you a third, a better one." Smith rose again, approached the desk. Morriss peered up at him in sudden apprehension. The man had a wild, corsair look about him, almost piratical. He had produced

yet another something from a pocket.

"This"—he held it between finger and thumb of his left hand—"is quite a toy. Starting here"—he indicated the plain end—"is a nine-volt cell, the kind you supply for those wrist-radios you market. Next to it is a chip, the sixty-four-circuit assembly . . . it's the Mark IX module that turned out to have undesirable characteristics and was scrapped, remember? And then a YIG crystal cluster, another one that came out wrong in the melt, the Y4C multiplier . . ."

"They were all consigned to scrap. Weren't they?"

"Not yet. You have two thousand of those in a store-bin. And be glad of that. There's a few more bits and pieces, all odds or rejects, and then we get to this." He indicated the other end now. "Remember that experimental laser-kit you got the contract for? Schools and hobbyists and instructional classes? Remember, too, that somebody set up the wrong figures and pulled off a thousand quartz rods that were too damned fine to be any good for anything? Well now . . . there's a bit more to it than that, naturally, but the point is, everything here is from your own stock-bins and more than half of it is reject or scrap."

"Our reject rate is no higher than . . ." Morriss tried, but Smith wasn't listening to him. He changed hands, felt in another pocket.

"Recognize that?" he asked. Morriss took the slim slab of metal, some three inches by two, mirror-finish one side, rough cast the other, scratched his memory, found the reference.

"That's a base plate, one we use for our microportable TV."

"Right. It's vanadium steel, one-eighth of an inch thick, and a swine to cut, but you have to have it, as the only substantial bit in the whole assembly. Holds everything else together. Now . . ." Smith reached for a couple of financial reports, gray-backed volumes that were identical save for the monthly imprint. He arranged them parallel with an inch gap separating them, laid the metal plate to bridge the gap. A third volume on top reduced the gap still more. He made a careful adjustment to a knurled collar around the waist of the thing in his hand, then brought the thin quartz rod close to one edge of the metal, using the third volume as a guide-line for his hand.

"The circuitry," he murmured, as if talking to himself, "does things to concentrate the final output into a beam with a cross-section considerably finer than a hair. So the temperature in that beam-section is something ferocious."

Morriss saw the quartz tip move steadily along, saw a needle-point of intense glare and a spit of microscopic sparks.

"Of course," Smith mused, "that beam range is only a shade more

than an inch, but what more do you need?" He reached the far edge, lifted the gadget away. The mirror surface looked as if it had been scored with a needle, until Smith picked up the uncovered half and handed it across. "It's cold," he said, "and a clean cut. Mind your fingers, that edge is like a razor."

Morriss stared at the clean edge and had no words. He gazed up at Smith, and still the words wouldn't come. Smith grinned easily, took the cut plate back. "Just to show off," he said, almost apologetically, and took up a rubber band from the desk-tray. Diving into his pocket again he brought out a stub of chalk-white stuff. "Borax-stick," he explained. "It helps." He rubbed it delicately and sparingly on both cut surfaces, maneuvered them back together, slipped the band around to hold them, made another adjustment to the thing in his hand. This time Morriss saw a faint fan of blue from that quartz tip. Less than a minute later the plate was whole again, only now it was a staring impossibility, one-half of it mirror-smooth, the other half rough-cast finish. It was the same on the other side. Morriss turned it over, foolishly, just to check. His eyes and fingers could barely detect the join-ridge.

"Try that on Dommy Richards, and watch his face," Smith suggested, and, for a moment, Morriss grinned in anticipation, anxious to see what his chief engineer would make of it. But the mirth evaporated quickly.

"All right, Smith . . . if that *is* your name . . . what's it all about? You have obviously laid on this whole charade deliberately. But why?"

Smith's grin was guarded now. He held out the gadget for Morriss to take. It was respectably heavy, looked like a fat black pencil with a chrome waist-line. Morriss put it down, watched Smith settle back in his chair.

"I don't have to tell you," the inventor said, "that it's a sure-fire hobby item. That's your field. Battery-life is around eight hours continuous. And all the components are your own stock run or standard products. Here"—he fished out a folded paper from an inside pocket, leaned to toss it onto the desk—"is the detailed guts of it, circuitry and parts named. You know the prices, the costing, the potential market. Go ahead and analyze it market-wise. Say, for three months."

Morriss almost asked, "Why three months?" But his own wit caught up in time to stop that gaffe. There would be a flush of competition just as soon as other hobby-houses could lay hands on a sample and strip it. "Three months would be optimistic," he substituted. "Things catch on fast in this business."

"Yes, but . . . at least half the items in there are wild. Nonstandard. And you're the only one with the production details on file, the know-how. So you have the edge all the way. Still, three months would do for starters. And"—as Morriss reached for his terminal console—"it might be better on your desk-comp, not *that* thing. Just as well not to have anything on permanent record just yet."

"You don't miss a trick, do you?" Morriss muttered, his fingers dancing over his desk-computer. This *was* his field, and his fingers were sure, the LEDs flickering their swift responses. He had already intuited a final figure, but it was still something of a shock to see the results come up in hard green. It was big. The hobby market could pay very well if the item was right. And this was. It had a thousand potential uses. Morriss schooled his face. He was first and foremost a businessman. When he had said he wasn't in the habit of passing the buck he had spoken truly. He grasped the nettle firmly now.

"All right," he said, meeting Smith's stare. "How much?"

Smith leaned back in his chair and chuckled. "Comes the hard part. I'm as big a fool as the next man in some ways, Mr. Morriss. One of my follies is that I like to kid myself I'm a fair judge of character. So when you say 'How much?' like that, we both know what you mean. Only, I'm not selling anything. What you have there is all your own property. Even the paper and ink of the diagram is company stock. It's all yours anyway. Free!"

Morriss took two full minutes and several deep breaths and still his voice came out shrill. "You can't *do* that! Man, do you know what this thing is worth?"

"Don't tell me, I don't want to know. I'm no good at that kind of figuring, never was. No, it's a gift. If handing you back your own property can be classified as a gift. No sale, anyway."

Morriss shook his head helplessly. He wanted to get up and stride about, and shout, and *do* something. But Smith just sat there, serene and unmoved.

"There has got to be more to it than that," he insisted. "Three months you've worked here. In your own time, out of establishment components, you have produced something that will sell by the million. Yes, million! And now you're giving it away, to me. Smith, there has to be a string somewhere!"

"Well now," Smith nodded slowly, "there is a place where you could tie a string or two, if you want to. There are things you could do for me, again if you feel you want to. This is where it comes in, am I a judge of character?"

"Ah!" Morriss began to feel more comfortable. "What . . . a job?"

"Hah!" Smith laughed openly now. "You run true to pattern, Mr. Morriss. No, no job. Hell, what do I want with a job?"

"But, man, at a salary at least ten times what we've been paying you. And worth every cent of it, for a man who can do this kind of trick . . ." He saw that Smith was still grinning, still shaking his head. "No?"

"No. I don't have a lot of use for money."

That statement was so outrageous that Morriss could only gape.

"What you can do," Smith murmured, "if you want to, three little things. First, clear my wage-check to the end of the month."

"No problem." Morriss stretched out his hand. "A word to the cashier."

"And while you're doing that, the second thing. Have him fix up an unlimited credit account on you, in the name of Magruder Smith."

Morriss drew his hand back sharply, all his instincts screaming against such a deal. He hoped it didn't show on his face, but Smith had sharp eyes.

"You don't like that? You're thinking I might walk out of here and run up a few bills to take you for maybe half a million or some such figure? Now why would I do a thing like that? How good a character judge are *you,* Morriss?" Smith wrinkled his brow in curiosity. "Can I eat more than one meal at a time, wear more than one outfit, sleep in more than one bed at a time? Who can? As I said, I have little use for money. So long as I have enough to pay my fare to the next place, I'll get by."

"But . . ." Morriss hesitated, "a checking account! What for?"

"Just a thought. I might be back this way sometime, who knows? Still, forget that. Do it this way. Your word that if ever I have need of money, or a favor of some kind, I can call on you. Call it an obligation. How's that?"

Morriss looked down at the gadget, then at his figure-estimates, then back to Smith, and felt foolish. "You'd accept just my word?"

"I'll take that chance, sure."

"You said that I run true to form. Like Harvey Bander? You made this kind of deal with him?"

"And a few more, yes. I move around a lot. And that's the third thing you can do for me. You have other friends, Mr. Morriss. Write me a letter or two, like the one Harvey Bander wrote. That's all. That's it. I'd like to be moving on again."

This time Morriss took three minutes of baffled thought, then stretched his hand again to the intercom. "You'll have your wages, and your credit account. And three letters. I'm willing to take a chance on you, Smith. But there's a thing you can do for me, in a moment. Ah, Willmot. Morriss here. I'd like you to raise a new credit account. Yes. The name is Magruder Smith

. . ." It took only a few minutes. As Morriss released the switch and sat back the unusual forename rang a long forgotten bell in his mind. "Magruder Smith?" he murmured. "I have heard that name before, haven't I?"

"Maybe. You want to know why I choose to live this way, right? Well, that's part of it. A long time ago now, full of bright and shiny ambition, I started up my own business. This line, but nothing this size . . ."

"*This* was a shoe-string outfit once," Morriss interrupted, "and it took a lot of damned hard work to build it up to what you see now."

"I appreciate that. I know. I had ideas, and they worked. I made a lot of money fast. And then, it seemed like all at once, there I was at a desk, dealing, trading, arguing, trying to tell other people what to do, and how to do it, watching them do it, and worrying . . . a load on my back all the time, ulcers getting a grip on my guts. All that, while I paid men on the shop-floor to do what *I* wanted to do. It was no good. I sold out. I quit. Money wouldn't buy what I wanted, and I can't be idle. I need problems, but I like to be free to pick my own. This way . . . I can. That's it."

"You'd be worth a lot to me," Morriss murmured, scribbling hurriedly. "Your own office, work your own hours, all the facilities, references . . ."

"On an income I'd have to pay taxes, file returns. And it can get lost or stolen. You realize if I got mugged in a dark alley tonight I wouldn't lose a thing? I have nothing to lose. I'm rich enough, in the only way inflation can't touch. I know eight or ten people like you who owe me, should I ever be in need. Who can steal that?" He rose and stood by the desk as Morriss finished the last letter and folded all three into an envelope. "You better have this, too." He produced a card with a circuit diagram on it. "That's my bug-finder. My own. It works. You can get yourself one made up. But, take my advice, don't sell it. Let a professional bug-man get a good look at that and he'll figure out a bug to beat it. I could. And one last thing." This was another paper with a long screed on it. "You have pretty good security arrangements here, but there are a few weak spots. That's a list of them, and how to tighten them up a bit. All right? Thanks for everything. See you around sometime, maybe."

For a long while after Smith had gone Morriss sat still at his desk, deep in thought. The man was smart, obviously. But crazy, too. No home, no roots, no money in the bank, no security, not even an automobile! Just a bum, wandering from job to job. It was no way for a man to live. So why, Morriss demanded of himself savagely, why was he so achingly envious? ■

LLOYD BIGGLE, JR.

Every society has its own way of finding a punishment to fit a crime.

no biz like show biz

Tomorrow and tomorrow and tomorrow

Creeps on this petty pace from day to day . . .

Wace Renoldon Farley, 673-492-479-341-895 to his friends, was teaching a ballet step to Horace Wangley Whipple. Farley counted aloud: One, two, one, two, one, two; and sometimes he hummed: Hmmm ho, hmmm ho, hmmm ho.

And while he worked, his mind wove gossamer funeral shrouds for fragments of dead beauty.

A stage where every man must play a part

And mine a sad one.

Whipple was learning to dance because one night in a fit of rage he beat to death his cohabitant, their infant daughter, and his mother. (He already had learned four card tricks, one magic act, a comic song, and an inept imitation of an unpopular Director of Public Safety.) He wore a brief ballet skirt and nothing else; sweat glistened on his bulging, hairy stomach as he balanced precariously on his toes and moved, with unsteady, mincing steps, from one side of his cage to the other.

He reached the bars, resisted the impulse to grab them, and managed an awkward, stumbling pivot without losing his balance. Farley's hand relaxed on the punishment button. (Whenever Whipple touched anything to steady himself, Farley gave him an electric shock.) The hirsute ballerina looked hauntingly like a clumsily waltzing gorilla in a ballet skirt, but the analogy would have been lost on Farley, who had no personal knowledge of that extinct primate.

They were two atavists adrift in the wrong time and place. Whipple—whose physique should have been magnificent—in a world where strength and physical skill were meaningless; Farley—whose keen mind was shaped to the exquisite, dramatic interplay, the iridescent beauties of man and fate contending—in a world that had abolished both fate and beauty. The one's body met the other's mind only on the simulated musical beat: One, two, one, two.

Now, by two-headed Janus,
Nature hath framed strange fellows in her time.

Farley regarded Whipple with mingled pity and contempt. The slobbering brute's stuttering gyrations were pathetic, but Farley knew that everyone else would find them hilarious, and the successful addition of this ballet number to Whipple's necessarily limited repertoire would add a minimum fifty thousand to his price when he came up for auction.

Farley also knew (this was the fate of one who saw beauty in man's contention with fate) that the enforcement of inhuman indignities on a human being merely because he'd committed a few murders was an outrage. Behind that fear-twisted face and those blankly star-

ing eyes was an indefinable quality of the human condition that the cage and its accompanying gross humiliations were slowly strangling.

These atavistic quirks of Farley's mentality would have deeply disturbed his superiors and his friendly local internal security agents had they so much as suspected them. Farley believed in the human soul, though he did not know what to call it.

* * *

Adjacent to the building that housed the Penal Authority were the crematory ovens and the gas chambers of the International Poverty Control Agency (US Branch). On this day ovens and chambers were not in operation, a fact that disappointed those tourists who rode out on the branch conveyor to gape at the infamous extermination and confinement centers.

One of them remarked, "Now that's what I call a job! Work only one day a month!"

* * *

Harl Ranno Lyndyl occupied a cage near Whipple's. He sat on the floor, vacantly grinning into the infinite. He did not know where he was, or why, or what Farley was saying to Whipple; but when Farley counted or hummed a dance beat, the regularity of the sound awakened in Lyndyl a flicker of response. Farley counted; almost imperceptibly Lyndyl nodded.

* * *

The Penal Authority was located on the edge of a diminishing swamp that had once been a river, and its district, formerly an island, was affectionately referred to as Old Blight, to distinguish it from the various new blights of the districts that surrounded it. It was the leading tourist attraction on the continent, possessing innumerable historic ruins, museums, legendary sites, a vast network of underground conveyors, quaintly ramshackle shops, and two of Earth's three remaining skyscrapers.

Tourists thronged the walkways, and the boldest of them timidly made their way into the *Anachron*, the world's last surviving public restaurant, the only place on Earth where real food could be bought and consumed. It even had a food store that sold raw and preserved foods for home cooking by those whose apartments were sufficiently anachronistic to still have the means.

In three of its four dining rooms (the small fourth room was reserved for regular local patrons) tourists held their scoops awkwardly and gummed a few mouthfuls of one of the creamy vegetable stews, or the vegetable curries, or the vegetable chowders, or (at an incredible price) the vegetable soufflé before they stole the menus to take home to their disbelieving friends and relatives.

There were tourist rumors that the *Anachron* would even serve meat, from unmentionable sources,

raw or cooked, and at wholly unbelievable prices, but these were based upon the understandable assumption that a place selling any kind of real food would sell anything. The regular customers knew nothing about it, as repeated governmental investigation had proved. (Any kind of a rumor of meat consumption automatically was subjected to investigation by thirty-seven different governmental departments.) The regular customers tended to be morose, solitary individuals, decent enough citizens, eminently law abiding, who were afflicted with digestive problems or otherwise allergic to wholesome synthetics, and the government was inclined to regard them more with sympathy than suspicion.

In the *Anachron*'s main dining room, Oswald Ossafont Oyner, a tourist, and his family were gazing in stunned disbelief at the steaming bowls that had been placed before them. Oyner gripped his scoop defensively and pointed. "What's that?"

"A piece of carrot," the server answered politely.

"And—that?"

"Tomato."

"And—those?"

"Peas."

Oyner wielded his scoop, slurped the contents distastefully, and swallowed. A moment later his stomach churned, and he clapped his hand to his mouth for a brief but losing struggle with his own physiology. The server resignedly pointed an autocleaner at the mess. It happened a minimum of a hundred times a day.

* * *

Wace Farley's initial success had emboldened him. He decided to teach Whipple *two* ballet steps, the second to be used to bring the act to a climax. He was counting: *One* two three, *one* two three, *one* two three.

Whether 'tis nobler in the mind to suffer

The slings and arrows of outrageous fortune,

Or to take arms against a sea of trouble . . .

At that moment Georg Donnoho Mallod entered. He took one look at the pirouetting Whipple and dissolved in laughter. "Great act!" he gasped. "Great act!"

The Penal Authority's Resident Administrator daily congratulated himself on his astuteness in rescuing Farley from the inevitable fate of the unemployed, the ovens. The shy young man had seemed intent on suicide, devoting all of his legally allowed training to such an outlandishly unemployable specialty as ancient dramatic arts; but Mallod had a friend in the Poverty Control Agency who made it his hobby to sift out individuals with unusual qualifications and find employment for them. He mentioned Farley's specialty to Mallod, and Mallod had reflected that the ancient dramatic arts were, after

all, the primitive ancestors of contemporary public attractions. In sifting the moldy mounds of obsolete information Farley must have turned over a few notions that could be adapted to contemporary use. Mallod hired him.

Farley's immediate, spectacular success already had gained Mallod a promotion that had been five years overdue, and Mallod was generous enough to publicly give Farley some of the credit for it. Mallod was not aware that Farley hated his work, or that he believed in the human soul.

"Dr. Savron is coming," Mallod said.

Farley continued his count. Since he had never heard of Dr. Savron, he doubted that the visit concerned him. *One* two three, *one* two three.

How weary, stale, flat and unprofitable

Seem to me all the uses of the world.

"He's the director of Rolling Acres. That's the new Public Recreational Center over in District Eleven."

"I've heard of it," Farley said. "I didn't know it had entertainment accommodations." *One* two three, *one* two three.

"It does," Mallod said grimly, "and Savron will have a priority order. He'll want the usual dozen attractions. Why public establishments think they have to compete with private places of entertainment is more than I can understand. I've complained to several legislators about it. Not only is the competition unfair, but it reduces our surpluses. Well—Savron is on the way, and we'll have to make the best of it. I told Karlson to move a dozen attractions with bids under a thousand to the central concourse."

Farley left off his counting. "I have a couple of short-termers I'd be glad to unload. A pickpocket—he's quite good. We got him back when the Happy Hours exhibit failed, and since he only had six months left to serve—"

"Good idea. There won't be any bids, so we might as well let the Rolling Acres budget feed him."

"Also, there's a con woman who has wonderful dexterity. Unfortunately, she's such an ugly old thing that there were no bids, and now she has less than a year to serve."

"Send them down," Mallod said. "I'll unload them if I can."

"I wish we could unload Lyndyl."

"We'll certainly try. I want you to come along and view Karlson's attractions. I think it's mostly his fault we don't get better bids on them."

Farley shrugged and got to his feet. It would be a challenge. Sometimes, if there was a challenge, he forgot that he hated his work.

The two of them left, and the multimurderer Whipple, still pain-

fully balanced on his toes, stared after them.

* * *

Even the *Anachron*'s building was anachronistic, a shabby eight-sided affair with eight doors, and the restaurant's regular customers loved it. Many of them had been eating their daily meal there for years, and the private dining room enabled them to enjoy their food undisturbed by gabbing tourists who all seemed to have unpredictable stomachs.

The regular customers also had their own convenience lounge, on the sublevel where stocks of food were stored, and from the convenience lounge, those regular customers who over the years had established themselves as trustworthy followed a labyrinthine path among the pungent-smelling bins to a remote wall. After a meticulous inspection through a secret panel, a secret door opened and they were admitted and for a wholly unconscionable price served a huge, foaming mug of berr, a transaction that would have been investigated by seventy-one outraged governmental departments had it even been suspected.

But the *Anachron* had performed its own careful, long-term investigation of these regulars who were admitted to the secret sublevel taproom. They were reliable. Some quaffed the forbidden beverage as the only means of rebellion open to them. Others had developed a taste for the berr. If some managed to make a few mugs of berr last through a day or an evening or a night of companionable talk, who was to notice? It was not without forethought that the *Anachron* had endowed itself with eight entrances—and exits.

On this afternoon Eman Xavion Helpflin was the taproom's only customer. He had been there since morning; much of the time he was alone, because Melisander, the drawer, worked in the storerooms when business was slack.

Helpflin sat in the darkest corner of the room and at lengthening intervals tilted his mug, sipped, and watched the flecks of foam slowly slide back into the berr. He was an employee of the International Poverty Control Agency, and at the most recent E (for extermination) Day, an employed man and his family went to the ovens because the Agency had stupidly snarled its records.

It was not Helpflin's fault. The contrary—he received a commendation for his own attempts to straighten out the mess. He did straighten it out, but an accumulation of minor errors of omission elsewhere negated his efforts. He received a commendation; the man and his family nevertheless were dead.

Commendation and merit citations carried automatic grants of leave, and Helpflin was spending his in the dark corner of the

Anachron's secret taproom, tilting his berr mug and staring at the foam.

If Wace Farley had been able to articulate his ideas concerning the human soul, Helpflin would not have believed him, but he would have liked to.

* * *

Dr. Marnis Murgatroyd Savron carried his lank form at a slight forward tilt, which enabled him to view the world with close suspicion through his bulging pol lenses. Mallod read him easily: He knew nothing, he had no previous experience with criminal attractions, and he would have preferred to send a subordinate but hadn't dared. He would be far more difficult to deal with than a professional; knowing nothing, he'd be terrified of making a mistake.

Mallod asked, "How many accommodations does Rolling Acres have?"

"Twenty displays," Savron said, sounding apologetic.

"Twenty!" Farley exclaimed. "Why, no other public exhibit has more than—"

Mallod silenced him with a glance and spoke firmly. "Absolutely impossible." He opened a folder and inventoried Karlson's list of low-bid attractions. "Six is the very best I can do for you. That's just to get you started, of course—we'll add to them whenever we can until we've filled your displays, but it can't be done quickly. To help tide you over, I can let you have a couple of short-term attractions—a pickpocket and a con woman—in addition to the six."

"I'd hoped for at least two murderers," Savron said, still sounding apologetic.

Mallod shook his head. "There's only one available. Brenda Barris, the cohabitant poisoner."

"Poisoner?" Savron grimaced. "I don't think our public would like that."

"She has a very good act," Mallod assured him. "You'll see her. You'll see all of them."

"I heard that Whipple hadn't been assigned yet."

"He hasn't." Mallod smiled at him. "And the bids have reached half a million."

Dr. Savron's startled, "Oh," was a mixture of incredulity and disappointment.

"We're the only branch of the government that shows a profit," Mallod said, still smiling. "We turn millions back to the treasury annually, and those millions support many worthwhile projects—such as the Rolling Acres Recreational Center. We're sympathetic to free public exhibits in parks and recreational centers and community malls, but the directors must understand that merely because the attractions are transferred from one branch of government to another doesn't mean that they're without cost. They cost whatever we would have been able to get for leasing

them to private exhibitors. If we turned our really valuable attractions over to public exhibits, the budget wouldn't balance and there'd be an investigation. Did you by chance get the written approval of the Penal Commission before you built the twenty displays? No? The code limits you to twelve, you know."

Savron said uncertainly, "Well, the funds were available, and people seem to enjoy the displays, so we thought—"

Mallod was nodding grimly. "I'll do the best I can for you. If you'll promise not to complain, I'll promise not to call anyone's attention to the twenty displays. Fair enough?"

"Well—I suppose."

Mallod patted his shoulder familiarly. "Come along. You can pick out your six."

* * *

Melisander, the *Anachron*'s taproom drawer, was becoming deeply concerned about Eman Helpflin. The man had stretched three mugs of berr over most of a day, which did not seem excessive, but he had been staring into his mug for so long that Melisander knew he either was intoxicated or hypnotized.

"Don't you think you ought to eat something?" he asked.

Melisander's suggestions were the taproom's only code of law. Helpflin knew he wouldn't get a refill until he had eaten, so he pushed his empty mug aside and went up to the *Anachron*'s private dining room. An hour later he was back in the taproom, slowly sipping berr and staring at the foam.

* * *

Karlson was waiting in the central concourse when Savron, Mallod and Farley arrived. A garrulous, middle-aged man of limited intelligence, he had been maneuvered into his job by a prominent politician relative to save him from extermination, and he ploddingly tried to use the same tired entertainment ideas over and over. Farley, who felt sorry for him, helped him out whenever he could, but persuading him to drop a bad idea in favor of a good one wasn't easy; he couldn't tell the difference.

With a smug little smile Karlson led them to the Brenda Barris display; probably he expected her to charm Savron into accepting the rest of his badly trained riffraff. He sounded the warning buzzer; the stage lights came on; the curving panels became transparent.

Brenda Barris was a faded, bulgy, graying woman whose cohabitant had wanted to leave her for obvious reasons. Karlson attempted to make sirens out of all of his female criminals, and he had attired Barris in trousers cut so short they were almost nonexistent and a transparent shirt. She wearily went through the motions of setting a table, making cafron, adding simulated poison to one cup, and then seating herself to wait for her doomed cohabitant.

Savron was shaking his head disgustedly. He knew he was inexperienced, but he resented being considered stupid. Mallod said to Farley, "Tell Karlson what's wrong."

"The casting," Farley said. "An ugly old woman doesn't become an attractive young woman merely because she's committed murder. Make Barris a surrogate mother. Dress her conservatively and teach her to smile. And when she's made the drink, she ought to pretend she's inviting someone in the audience to share it with her."

"Get working on it now," Mallod ordered. "We'll make the rounds without you. By the time we're back here, I want to see a good act."

"Yes, sir," Karlson muttered and turned away.

"Give her a bigger bottle for the poison, with a label large enough to be identified," Farley called after him.

They took Savron, still savoring his disappointment, to see Farley's short-term pickpocket; but the pickpocket was in fact very good. He did dexterity tricks and juggling, and during the act he picked his own pockets. Savron accepted him eagerly.

"I think I'm beginning to understand this," he said. "You need a few sensational attractions to pull the people in, and once they're in it's good solid acts like this one that keep them entertained."

"That's true enough—for the private exhibitor," Mallod said. "He charges admission, and he has to have sensational attractions to make people buy tickets. Free exhibitions pull crowds regardless."

Savron did not seem convinced. He grudgingly accepted the short-term con woman while complaining about her ugliness, and Mallod said tartly, "All kinds of people commit crimes, and we have to do the best we can with what's available. If Barris were young and pretty she'd fetch a high price without any act."

Karlson's next offering was a half-witted burglar he'd tried to make funny by having him tiptoe about in a dim setting knocking things over. While Savron was gloomily contemplating this, Mallod drew Farley aside.

"We've got to give him one really good attraction," he said.

"How about letting him market-test an arsonist for us?" Farley suggested. "I've worked out a new act for our twelve-year-old."

"Good idea."

Mallod drew Savron away from the burglar's dreary performance. "That's no act at all," he said apologetically, "but we have to give every one of them a chance. I know you'll like the next one. An arsonist."

Savron was doubtful, but his attitude quickly changed to one of rapture. The pink-cheeked youngster artfully spread combustibles through the display and ignited

them. And as the display went up in flames, the youngster broke into a frenzied, elated dance, his body trembling, his mouth drooling, his face twitching spasmodically, his eyes wildly flashing excitement.

Savron's enthusiasm so mellowed him that they took him back to Barris and got his grudging approval on her act as a kindly, poisoning surrogate mother.

"But I wish I had another murderer," he said.

"How about an ax murderer?" Mallod suggested.

"Really? You'll let me have one? That's wonderful! Who is it?"

He had never heard of Harl Ranno Lyndyl, and when he saw the cherubic little man seated on the floor of his cage and smiling vacantly, he refused to believe it. Lyndyl did in fact look like the most congenial of toenail curlers, which he had been before he took an ax to a patron.

Unfortunately—from the Penal Authority's point-of-view—he bungled the job. The employer was on his tenth heart transplant and hadn't long to live anyway, and the heirs managed to dampen the publicity. When the patron finally died there was doubt as to whether Lyndyl really killed him. Not only did that make Lyndyl an unknown, unsuccessful murderer, but he had no talent of any kind for entertaining. Farley worked out several acts for him, but all Lyndyl would do was sit in his cage and smile.

They abandoned Lyndyl. Savron indifferently accepted an attraction where two criminals convicted of thuggery pounded each other with gloves too padded to do harm, and he was delighted with a con man who had worked up a monolog in which he tried to sell the audience the continent of Brazil. In the end Savron had put together six nicely varied attractions plus the two short-term acts—a good beginning even though he had no sensational attractions. He arranged to take immediate delivery, and Mallod escorted him out.

When he returned, he said sternly to Farley, "We've got to do something about Lyndyl, or we'll have him on our hands for life. Anyway, we have so few murderers that we can't afford to waste one."

"It's hard to train a man who won't do anything but sit and smile," Farley pointed out.

"Put him in punishment," Mallod said. "Make him understand he comes back up only when he has an act worth viewing. If that doesn't work, I'll see if we can get him released temporarily on some pretext."

"But he's certified a dangerous homicidal maniac!" Farley protested.

"Right. By the time we got him back, he ought to have a reputation that'd make him worth a quarter of a million, at least."

* * *

"The maximum?" the punish-

ment attendant asked hopefully. He was one Penal Authority employee who enjoyed his work. Farley told him to start Lyndyl with five percent and give him a daily increase.

They chose the electrical regimen. There was one neutral spot in the punishment cage, which changed with each punishment cycle, and until the criminal found it everything he touched shocked him painfully. Lyndyl hopped wildly about the cage, a pathetic, whimpering, slobbering animal. When finally he located the neutral spot, he had to stand on one foot while the charge built up around him. Once he lost his balance and landed screaming on the floor. At the end of the cycle, at the moment prescribed in Lyndyl's medical chart, the neutral spot delivered one massive shock that knocked him unconscious. On a five percent electrical regimen, this happened once every twenty hours.

Farley visited the punishment cages only when he had to, but the sight of a criminal being privately and scientifically punished affected him far less than the sight of one being publicly humiliated in an entertainment exhibit. Those who committed crimes merited punishment. No one merited humiliation; which was, Farley thought, why he hated his work.

* * *

The *Anachron*'s taproom was crowded that evening when Wace Farley arrived. He had been a regular customer since his student days, and Melisander, the drawer, gave him a friendly grin as he passed him a brimming mug. Farley saw an empty table in a dark corner and started toward it, but before he reached it he saw that it was occupied. He was looking about him again when Eman Helpflin glanced up at him, finally comprehended that he was searching for a chair, and motioned Farley to join him. For a time the two of them sipped berr together and contemplated the foam.

Helpflin, without knowing it, was intoxicated. He didn't know it because he'd never been intoxicated before. Very few living men ever had been intoxicated. One hundred and seventy-two governmental departments would indulge in a frenzy of investigation if Helpflin's condition became public knowledge.

Helpflin said, speaking slowly and distinctly, "I killed a man."

Farley eyed him skeptically. He associated with all sorts of criminals during his working hours, and it took more than a confession of murder to ruffle his equanimity. "So why aren't you in a cage?" Farley demanded.

"Cage?" Helpflin echoed.

"Murderers get put in cages. All criminals get put in cages."

"Never thought about that. Anyway, it wasn't my fault."

"That's irrelevant," said Farley, wise to the ways of the law. "Most

criminals didn't mean to do it. You should be in a cage." He chuckled. "Heard a funny one today. Promoter found he couldn't afford new criminal attractions. He'd read somewhere that people used to pay money to see animals in cages, so he decided to add some animal attractions. Turned out it's against the law!"

"Do you mean to say," Helpflin asked slowly, "that it's illegal to exhibit animals, but it isn't illegal to exhibit people?"

"Right. Animals can't be subjected to inhumane treatment. Humans can."

"But only under the proper circumstances," Helpflin pointed out. "That is, only if they're criminals."

"Wrong." Farley leaned forward and lowered his voice. "They can if there's money in it. Government makes money leasing criminals for exhibitions. Government wouldn't make any money if animals were exhibited."

"Is it illegal to kill animals?" Helpflin asked.

"I suppose."

"But it's perfectly legal to kill people. They do it every E Day."

"But only under the proper circumstances," Farley pointed out. "That is, only if the people are unemployed."

"Meaning that there's money in it," Helpflin said quietly. "In this case, money to be saved."

"True. Fellow can't find work, he draws unemployment for two years, still no job, zip." Farley drained his mug, excused himself, went for a refill, and returned licking the foam from the top of the mug.

They spoke of other things, the mugs were refilled again, and the evening wore on pleasantly. "Getting put in cages," Farley said suddenly, "is worse than dying."

"Why do you say that?" Helpflin asked.

"Two years, no job, zip. But go beat an old woman to death or something worse, and they put you in a cage. Doesn't that prove being caged is worse than dying? Otherwise, they'd put the guy that can't find a job in a cage, and they'd exterminate the murderer."

"That way there wouldn't be any money in it."

The taproom temporarily had changed drawers. Melisander had become suspicious about the two quietly-talking figures in the corner, both of whom had been drinking far too long. His substitute was unaware of this; he cheerfully refilled their mugs. There were now two intoxicated men in the room, and if the hundred and seventy-two departments found it out there would be a hundred seventy-two cases of departmental apoplexy.

"I still think it's inhumane putting people in cages," Farley said half a mug later.

"Let 'em out," Helpflin suggested.

Farley stared at him.

"Then they'd be unemployed,

and the government would exterminate them!" Helpflin guffawed.

"Never thought of that," Farley admitted. "Can't let 'em all out. Too many checkpoints. Might let Lyndyl out, though. They're torturing him with electric shocks."

"They shouldn't ought to do that," Helpflin observed. "It sounds inhumane."

"Naw—it's just punishment. He's a murderer, he should be punished, but they're not punishing him for that. They're punishing him because he won't learn an act and perform in public in a cage, and *that's* inhumane."

"Why don't you let him out, then?"

"I will. It'll take planning, though. Will you help?"

"Of course. I'm good at helping people. They die anyway, but I'm good at helping. I have a commendation."

The two of them moved their heads closer together and continued to talk.

* * *

They loomed up out of a chill night and rang the Penal Authority's gong. Farley was wearing an outlandish, enveloping cloak; Helpflin was similarly attired and also wore a disguise Farley had selected from his collection of props for criminal attractions: false nose and teeth. In addition, Helpflin had stopped off at the Poverty Control Agency and manufactured a complete identity kit.

The door guard gazed at them curiously. "This is Dr. Berr," Farley said. "I have to get medical approval for Lyndyl's new act."

The guard sourly signed him in and waved them along. All the security checks were casual. No one ever had escaped from the Penal Authority, or even tried to. How could the prisoners escape, when all of them were in cages?

Farley hurried Helpflin past the three interior checkpoints, each superintended by a watchman who nodded sleepily from his enclosure. The punishment night attendant was asleep. Farley did not hesitate—he released Lyndyl, attired him in his own concealing cloak, giving it a fold that hid the face, and watched Helpflin lead him away. Surreptitiously he saw them past the first checkpoint, and then he went to an upstairs window and watched until they safely emerged from the building.

With a feeling of immense satisfaction he staggered drunkenly back down to punishment, entered Lyndyl's cage, and closed the door.

* * *

"I appreciate the loyalty," Mallod said, "but you shouldn't have done it."

Farley never had seen him so flustered, but because of his gigantic headache he was having difficulty in concentrating. He could only stare at him.

"I didn't mean that seriously about getting Lyndyl released,"

Mallod explained. "But it worked. He'll be worth half a million to us, now."

Comprehension came slowly to Farley. "You mean—Lyndyl has committed another crime?"

"Another murder," Mallod said, with deep satisfaction. "Now he's a double-murderer, and also the only criminal escapee in two generations, and he won't have to have an act. He can sit there smiling and make the audience shudder."

"Who did he murder?" Farley asked, aghast.

"Who'd you expect? That Dr. Berr you brought to see him. We found his cloak and identification, but Lyndyl won't tell us what he did with the body. If he shoved it into a commercial disposer, and he had the opportunity, we'll never find a trace of it. Which is neither here nor there. You shouldn't have done it. The Authority doctor is of the opinion that you were of unsound mind due to a food poisoning he can't identify, and that's your best line of defense. Stick to it, and don't mention what I said about getting Lyndyl out, and I'll do everything I can for you."

* * *

"Life imprisonment," the arbiter said, "with mandatory punishment at a minimum fifty percent level. I'm prohibiting your lease to any public or private exhibition—though why one would want the author of such a sordid crime I couldn't comprehend."

Farley said bewilderedly, "But *I* didn't do any murder!"

"You helped to free a homicidal maniac, so you were responsible for what he did—which is beside the point. I wouldn't give you mandatory punishment for that. Murder is a crime against one person. In conspiring to release a legally-confined criminal, you committed a horrendous offense against your government—in other words, against half a billion people. Get him out of here before I make it punishment at the hundred percent level!"

* * *

A wretched soul, bruised with adversity . . .

Twelve times each day—once every two hours—Farley felt the preliminary tingle that signaled the beginning of the next punishment cycle. Wearily he began to search for the neutral spot. His few attempts to defy punishment failed; he was physically incapable of standing the shocks, and eventually he would be forced to search desperately for the neutral spot with the same pathetic, groveling whimpers that had so revolted him when he witnessed the punishment of others. He looked forward to the final shock that brought unconsciousness; it was the only rest he had.

There's some ill planet reigns:
I must be patient till the heavens look
With an aspect more favorable.

He nevertheless had cause for thanks. He had committed a crime; he deserved punishment. At least he had escaped the humiliation of public exhibition.

* * *

He suffered eight days of continuous fifty percent punishment; then, regaining consciousness after a punishment cycle, he found himself caged in the Penal Authority copter used to transfer criminals. It landed, and he was brusquely removed and thrust into another cage.

A beaming Dr. Savron looked in on him. "Welcome to Rolling Acres!"

Farley regarded him incredulously.

"Mallod and I arranged this," Savron said. "Officially, someone made a mistake and brought you instead of the criminal we contracted for. It'll take time to straighten out the mixup, and you'll have a few days of rest from punishment."

"Thank you," Farley said. "That's very kind of you."

"Not at all. I'd like to have you here permanently, to help with the attractions. But since you're an enemy of the government, under a sentence of mandatory punishment with exhibition prohibited, naturally it is out of the question."

"Naturally," Farley agreed, with a faint smile.

"Unless," Savron went on, "you're able to perform an act yourself."

"I'm a student of history, not a performer."

"Exactly. But if you were to come up with something extremely popular, and it would have to be sensational, then we could put pressure on the arbiter to let us keep you. Mallod thinks you can do it. That's the real reason we arranged this. He says to tell you he's doing the best he can for you, but it may be a long time before you get another chance like this."

"Thanks," Farley said, "but I prefer punishment to public humiliation."

"Exactly. But we have some distinguished visitors in addition to the usual afternoon crowd. The entire Board of Commissioners is here, and if they see something they like they'll certainly persuade the arbiter to let us keep it. You may never have another opportunity like this, but the act will have to be exceptional. Good luck—you're on in half an hour!"

His face vanished. Farley stared after him contemptuously. "I haven't got an act!" he shouted. "I don't want an act! I won't do an act!"

There was no response; Savron had left, and the panel was closed. Farley dropped into a chair and looked about him. The exhibit's stage was set to resemble an ordinary room: chairs, a table, a rack of book tapes (but no player),

cheap ornaments and knickknacks. Idly he wondered what preposterous stupidity of an act had been planned for such a setting, but it was no concern of his. The one dignity left to him was the right to refuse the indignity of performing publicly in a cage. When Savron returned he would tell him so, emphatically.

But he was not ungrateful for the respite from punishment. He was exhausted, and it certainly would be long before he again enjoyed the luxury of uninterrupted sleep. He stretched out in the chair and dozed off immediately.

What hath this day deserved? What hath it done

That it in golden letters should be set

Among the high tides in the calendar?

The warning buzzer awakened him. For a moment he could not think what it was, or where he was. Then he shouted, "I haven't got an act! I won't do an act!"

The stage lights came on, the panels went transparent, and he found himself glaring furiously at his audience.

He had never seen an audience before. In the past, he always had been *in* the audience, listening to its reaction but concentrating furiously on what the performer did. Now, for the first time, he saw the faces.

The leering, the coarse, the mocking faces. In the front, a group of small boys were shouting taunts at him. Girls were tittering, women giggling, men grinning. Only the commissioners, unmistakable in their flamboyant uniforms, looked on solemnly.

He leaped to his feet. At one side, staring at him, was his alleged friend from the *Anachron,* the supposedly murdered, phony Dr. Berr, whose real name Farley had not learned. "You told me to do it!" Farley screamed. He pointed a quivering finger. "You! It's your fault!"

The crowd dissolved in hilarity. Its wave of laughter smote him; a hideously cackling mouth gaped at him from every face. Only Dr. Berr was not laughing. He was staring in consternation.

"You!" Farley shouted.

Dr. Berr turned and fled.

Fury overwhelmed Farley. He picked up his chair and sent it crashing against the panels. "You!" he screamed again.

Another chair. Crash.

A table. Crash.

"You!" Farley screamed. "You told me to do it!"

Cushions. The book tapes. The ornaments and knickknacks. Anything he could lift, and his strength was prodigious. He dashed into the adjacent sleeping quarters, returned with a chest, and flung that. From the convenience lounge he brought a tumbler of water and splashed it at the audience.

Then he hurled himself against

the panels and futilely beat on them with his fists.

His anger began to fade, and he stared dully at the packed faces before him.

They were convulsed with laughter. The children were rolling on the ground, the adults were helplessly clutching their sides, even the dignified commissioners were howling.

Again his wrath overwhelmed him. He screamed insults, he hurled every loose object in his cage, and when the stage lights faded and the translucency returned to the panels, he lay on the floor at the front of the cage, kicking with impotent rage and futilely hammering the panels with bloody hands.

Slowly he got to his feet. For a long, stunned moment he contemplated the debris that lay scattered in the wake of his anger, and then, defeated, humiliated beyond any hope of atonement, he sank to the floor and wept for the cool dimness of his punishment cage, for the honest torment of the electrical regimen's unsullied pulsations.

"Farley!"

He looked up uncomprehendingly. Dr. Savron was beaming at him. "Great act! Absolutely great! Sensational! You did it! You're the best attraction we have! I'll get statements from all of the commissioners and see to your permanent transfer in the morning. I'll also tell the stage man to get you some cheap props so you can put on a show without breaking up good furniture. We won't exhibit you again until it's ready."

His face disappeared. The stage man entered a moment later, wiping his eyes. "Never laughed so hard in my life," he said. "Great act. I'll get you some cheap props."

He removed the debris from the cage and returned with an inflated chair. "Here's something to sit on till we find props," he said. "You can throw it all you like."

He left, and Farley dropped into the chair and closed his eyes.

He was caged. It was illegal to cage animals for display, but it was not illegal to cage Wace Renoldon

in times to come Tak Hallus culminates his series of stories about the Jenson matter-transmitter with a novel, "Stargate," that begins in our June issue. There will also be stories by Alfred Bester, George R. R. Martin, and others—plus an article, "Let There Be Light," by Thomas Easton, which shows how a blind person's skin can be turned into "eyes."

Farley, 673-492-479-341-895, and train him under the threat of dire punishment if he learned slowly, and make him perform ten times daily for a leering audience of inhumane humans.

He had never before thought of an audience in terms of *faces,* but now he had seen them: the hideously flushed, twisted, coarse, cackling, screaming, howling puffs of animate flesh. He had not imagined anything could be so repulsive. It was his lot to see them ten times daily, and he was caged and helpless.

But he had not lost, not yet. They could not force him to perform. Punishment was his rightful fate, and it held no terror for him.

He opened his eyes and looked about him. The Rolling Acres accommodations were the most lavish he had seen. He got to his feet and made a hasty inspection. Behind the stage was a comfortably-sized bedroom and the private convenience lounge with bath. The stage was oversized and could serve as living quarters and study when he wasn't performing. The apartment he'd been able to afford on his Penal Authority salary seemed cramped by comparison. Probably they would let him have his library—he could claim to be studying Shakespeare in search of ideas for a new act.

They could not force him. There was no possible way they could compel him to perform.

He sat down again. If his demented violence had brought howls of laughter, what would a real act do—an act with pacing, and continuity, and motivation, and climaxes, and a finish with a genuine punch to it?

They could not force him.

If they'd let him have a water tap in full view of the audience, he could fill a container with water and throw that. He'd need two containers. He'd fill one, and drench the panels with it, and they'd be convulsed. Then he would fill it again.

If he could somehow arrange for the panels to slide aside or open at precisely the right moment, then he could pick up a container and dash toward the audience, the panel would open, and the audience would think this notorious criminal was escaping and about to drown them. But it would be the second container that he carried, and as the spectators tried to scatter in panic, he'd dump a cloud of paper confetti over them.

It would slay them.

He leaned back in profound satisfaction. Wace Renoldon Farley, notorious enemy of the government and the people, Wace Farley would kill his audiences dead.

With a gentle smile on his face he fell asleep.

His glassy essence, like an angry ape . . .

Condemned into everlasting redemption . . . ■

LEO SUMMERS

HERBIE BRENNAN

Who was the first chief-of-state to intone: "A strong R&D effort is essential to national security . . ."?

the gods' decision

"Put him to death!" Livia hissed. "He's not even liked in the senate. Nobody will even question your decision."

Tiberius scowled at her without saying anything.

"He tricked you!" Livia urged. "You know he tricked you. No one in his right mind would pay in these circumstances." She stopped, wondering if she had gone too far, but Tiberius regarded her impassively. She laid one hand gently on his arm and some of the heat left her voice. "You must not allow a man like that to worry you, Tiberius. There are far greater affairs which merit your attention."

And still Tiberius said nothing.

"Quo vadis?"

"Octavian Patricianus," Octavian called quietly. The challenge should have been reassuring, but somehow it was not.

"Sir!" the sentry acknowledged briskly.

Octavian strolled forward, listening to an inner voice which asked him peevishly why he could not stay snugly in his tent. He passed the sentry and stopped. There was nothing to see. The camp was on a natural plateau and he was on the edge of that plateau now, staring out into darkness. In daylight it was possible to see for miles. There were forests out there and a lake to the north and two rivers and some wild plains country.

There were barbarians out there.

He shivered, a sensation which thrilled through the nervous system without producing any physical movement. Why had he not remained in his tent, snug in his bedroll?

Octavian listened. The plateau was a good site for defense, but that did not make it immune from attack.

"All quiet, soldier?" he asked the sentry over his shoulder.

"Yes, sir."

He felt uneasy.

He turned and strolled back into the camp. The central fires were blazing merrily, but at this hour most of the men were asleep—those who could sleep, that is: those who had no duties to attend to until morning. Only the hard ones and the wild ones stayed awake by choice. There was a group of them by one of the fires now, casting dice. Strange how gambling for money still fascinated men who might tomorrow gamble with their lives.

Octavian frowned. He was beginning to wonder if he could be ill. It had been years since such restlessness had gripped him.

Perhaps he was experiencing a premonition of death?

The men around the dice glanced up a little uncertainly as he approached, dropping their voices. But they did not stop the game. There was nothing against regulations in what they were doing.

"Ah-ha!" one called loudly as

the dice brought him a fresh pile of *sestertii.* He scooped the coins toward him with exaggerated satisfaction, an overreaction to his own discomfort as Octavian approached.

It was, of course, well-known that the gods sometimes sent men warning of their own demise. And it was also true that men would often fail to heed such warnings until it was too late. Was his uneasiness a warning?

The dice rolled over and over and stopped.

"Looks ominous," Xenophon remarked.

The sentry glanced up at the leaden sky. "Aye."

"You know what I would say?" Xenophon inquired. "I would say there's going to be a storm."

"Aye."

Xenophon grinned. "With thunderbolts . . . and rain."

"I'd say you might be right," the sentry agreed. He was a huge man, but very placid by nature. He had just enough intelligence to realize Xenophon was trying to bait him and more than enough good humor not to care. His brown eyes turned benignly on the little Greek.

"When Jove frowns, the sky grows black. When Jove is angry, thunderbolts are hurled," Xenophon said with an air of profundity.

They were standing in Cato's garden. The sentry had light duty: he guarded a side entrance to the mansion. He was part of a security system which existed only partly to guard a famous citizen in trying times. By far the greater part of its existence was due to Cato's paranoia. Most people knew the man to be three-quarters mad. Lunacy often walked hand in hand with genius.

"When are you due to be relieved?" Xenophon asked suddenly.

"Not for many hours."

Xenophon smiled sadly. "Strange, isn't it, that a citizen of Rome must stand outside in a rainstorm while a poor Greek slave may remain safe and dry inside."

"The ways of Fate defy explanation," the sentry quoted blandly.

Xenophon nodded. After a moment he said lightly, "I shall leave you before Jove hurls the first bolt in your direction. It would never do if he missed you and hit me."

The sentry grinned. "If I am in no worse danger than a stray thunderbolt, I shall stand easy enough." He watched as the little Greek scurried into the house. Distantly, he thought he heard thunder.

The afternoon had grown sullen, as if a storm was indeed in the offing. The sentry's eyes flickered upward to the metal rods Cato used to protect his mansion from the devastating ruin of the thunderbolt. He knew men who claimed that Cato had invented this protection, but the system was common enough to the better-class patrician

houses. No one quite knew how it worked, only that it did.

Strange how such slim rods could absorb such shattering power. Perhaps they only did so by Jove's express permission.

It was part of his duty to patrol that section of the garden which ended by the laurel bush. A shade beyond it, the rods traveled down the side of the villa to plunge into the earth of the garden. He walked toward them, drawing his sword.

When he reached the spot, he held the point toward the brief gap left between two rods. It was the one way he knew of foretelling whether Jove would hurl his bolts.

A blue spark crackled to his sword point.

Lightning flickered on the far horizon, but so distant that there was no hint of thunder. It was a still night, so that the movement of the sentries carried through the dim colonnades. The sound, a soft slap of leather on stone, leather on metal, and occasionally, the clink of metal on metal, was curiously restful.

Livia moved quickly through the open corridors.

She found him where he had taken to standing at night of late, on a balcony overlooking the lake. It was a pleasant spot. On warm, balmy nights, the scent of herbs drifted up from the lakeside garden.

"Tiberius!" she said, a trifle sharply.

He turned to face her, a small enough man, but immensely broad. The purple sat well on him.

"It is late, Tiberius," she said more softly.

"Late, is it?" There was a great coldness in his voice and she could imagine the hardness in his features, although with his face in deep shadow, his exact expression eluded her. "Would you have me in your bed, woman?"

She winced, but merely said, "Is it so strange a place for a wife to wish her husband?"

To her intense annoyance, Tiberius giggled.

Somewhere in the silent depths of the crowd, a man laughed. The sound was so infectious that it was taken up throughout the vast auditorium until a thousand throats were hooting at the contrast presented by the two men in the arena.

There were smiles even in the royal box.

"What a magnificent specimen!" Tiberius breathed. Memory forced a degree of hardness into his eyes as he turned to his wife. "Don't you think so, darling?"

Livia glanced at him from beneath slightly lowered eyelids, but said nothing.

"What's his name—the big one?"

Senator Marcus, seated to the left of the emperor, murmured,

"Some barbarian monstrosity. Really I forget it. Triton, or some such sound."

"And he's from?"

"The West," Marcus said vaguely. He waved an effete hand. "The West." His reputation was founded on eccentricity. He was expected to be vague.

"He looks as if he could give us royal entertainment," Livia remarked, more to the party at large than to her husband.

"We are aware of your tastes in entertainment," Tiberius said icily.

Contrasting with the giant and affording much amusement to the crowd was a tiny, yellow-skinned barbarian. He was much smaller than average height, wiry rather than muscular, and slightly bandy-legged.

As the ill-assorted gladiators walked toward the royal box, Tiberius asked, "The dwarf—from what country does he originate?"

"An island near Cathay. He is Cato's man. Heaven knows why he should risk such a curio in the arena."

From the corner of his eye, Tiberius noticed Livia stiffen at the sound of Cato's name. Perhaps the rumors were true. Perhaps the old fool really had refused her. But the prospect of comedy on the floor of the arena guarded his humor even against reminders of infidelity. "I imagine the noble Cato wishes to afford his emperor some entertainment. And what could be more amusing than a battle royal between a giant and a dwarf?"

"What indeed, sire—especially when the dwarf may win?" Cato was taking his seat behind the emperor, to the right of the first rank as his station permitted him. He looked calm today, like one nursing an intimate secret.

Although the voice was quite distinctive, Livia did not turn.

"You think your dwarf may win?" Marcus asked lightly in bantering tones, one eyebrow raised. He was a shrewd man and the tensions of the situation did not escape him.

"Not only do I think it, my dear boy," Cato told him with a note almost of gaiety in his voice, "but I have been prepared to stake a hard-earned *aureus* or two on my opinion."

"Faith, Cato, if you're serious about that, I would give you a wager myself!" Tiberius smiled suddenly. He had no particular love of Cato, but the lunatic was at least entertaining, which was more than could be said for the majority of senators. Besides, his money was as good as any other man's.

There was no answering smile. "Only a fool would wager with Caesar."

"But you are serious?" Marcus asked, some of the lightness evaporating from his manner.

"Oh, perfectly," said Cato easily. "I would be prepared to cover any wager. Within my means, that is."

He smiled. As was commonly known, his means were large.

Tiberius looked down at the men within the ring and chuckled. "If you are serious, then I insist that you permit me to take your money, my dear demented noble."

The dark eyes sparkled briefly. "Only a fool would argue with Caesar."

Octavian sat bolt upright in his tent. Outside, men were screaming. Despite his military training, it took him moments to orientate himself in the darkness. Then he reached for his sword and plunged outside.

It was a scene of chaos. Men and animals were milling everywhere. The hoarse shouts of the NCO's blended with the clank of steel on steel. At first he thought the enemy had actually penetrated the camp, the confusion was so great. But then he realized that while there was much confusion, there did not seem to be any actual fighting close at hand.

He gripped a hurrying soldier by the arm, swinging him to an abrupt halt by sheer brute force.

"Here, what the—" the man protested.

But Octavian cut him short. "What's going on?"

The patrician accents put a stop to further protests. "Sorry, sir. Didn't recognize you, sir. We're under attack."

"From which direction?"

"Don't rightly know, sir. I think it's big—pretty big."

It would have to be big to cause such consternation. "Have they penetrated the camp?"

"Don't rightly know, sir."

The man had one of those slightly flattened, faintly stupid faces so common in the legions. He would fight well and die bravely if necessary, but he was unlikely to show much more than a glimmer of intelligence. Besides, he obviously knew no more than he'd told. Octavian let him go and he scurried off into the shadows beyond the firelight.

"Octavian!"

The shout came from somewhere on his right. He turned to face Septimus, in full fighting armor, his eyes flushed and excited.

"By the gods, Octavian, it's incredible. There are thousands of them out there. Mars alone knows how greatly we're outnumbered." He stopped short. "Aren't you in armor?" he asked desolately. "Didn't you hear the alarm?"

"You there, sentry. What are you doing?"

The clipped, dry tones were so instantly recognizable that the sentry had snapped to attention even before he started to turn. "Nothing, sir."

"Nothing? Nothing, you say? Nothing, is it? Does a Roman sentry draw his sword in pursuit of nothing?"

"No, sir," the sentry said. He felt acutely embarrassed.

"Then why, pray, is your sword drawn?"

The sentry took a deep breath. "I wanted to see if there was a storm approaching, sir."

Cato was a slim man, somewhat stooped. He had feline features and tiny bright black eyes. The eyes were fixed on the sentry as the eyes of a snake fix on the body of a bird. "Look up, man. That's where storms appear. In the sky, sentry. Has your sword a voice that it tells you something your eyes do not?"

"No, sir."

"Speak up!"

"No, sir," the sentry repeated more loudly.

Cato had a single-minded perseverance. "Why do you seek to detect a storm with a sword? Unless you are hiding something from me, you should be able to answer that question, should you not? Or rather, you should be able to answer the question of *how* you propose to detect a coming storm with a sword. Do you not agree that you should be able to answer such a question?"

"Yes, sir," the sentry agreed woodenly. He was still at attention, body and face rigid.

"What a curious man you are," Cato said. "What a strange individual. What an odd personality. What a weird soldier! Don't you agree?"

The sentry did not answer, largely out of nervousness. But Cato seemed not to notice. "If you were to study the sky—which does indeed appear to be preparing for a storm—or if you were to study the actions of wild birds, or even if you were to consult an oracle, I would find nothing strange in your predictions of a coming storm, sentry. But to use your sword—which, some might say, could have been better employed in the defense of Cato's property—to use your sword . . . that, sentry, is a curious and strange and odd and weird thing to do, don't you agree?"

"Begging your pardon, sir, I wasn't trying to tell if there'd be a storm—just thunderbolts," the sentry said a little desperately.

"So," said Cato.

There was silence in the garden. Distantly, overhead, thunder rolled.

"Your ears would tell you sooner surely, sentry."

"Yes, sir."

"Or perhaps not," Cato mused. "Perhaps Jove becomes so frightened by your sword that he bends to Earth and whispers in your ear."

"No, sir."

The playful note left Cato's voice and he asked coldly, "How do you detect approaching thunderbolts with a sword, sentry?"

Small beads of sweat had broken on the sentry's forehead. "It's sparks, sir—like you get sometimes when you rub fur against your armor."

"Fur?" echoed Cato. "Armor?"

But the sentry was too panic-

stricken now to be stopped. "I put the tip of my sword to the gap in your protection rods, sir. If it sparks there will be thunderbolts."

"And if it does not?"

"There won't be any, sir," the sentry said uncomfortably.

After a long moment, Cato said, "Show me."

Moving like a puppet, the sentry drew his sword again and held it to the gap between the rods. Another blue spark crackled.

Cato left him and walked thoughtfully inside his villa.

Livia leaned across so that only Tiberius could hear. Anger, perhaps coupled with a knowledge of her own power, caused her to forget even her slight degree of customary caution. "Are you mad, Tiberius? The wager is too high! Have you forgotten even emperors have limits to their purses?"

"Hardly, my dear, when you so often drive me near the limit of mine," Tiberius murmured.

"Then take back the bet! Should Cato win—" She shuddered.

Tiberius kept his eyes on the arena. The giant and the dwarf stood side by side beneath him, saluting. *Nos moraturi te salutamus, Caesar!* "Look below you, Livia," Tiberius said quietly, "and tell me if Cato can win such a wager."

Livia fell silent, although the tension did not leave her face.

Dawn came. The sun crawled out of the distant forests, a sullen red which foretold rain later in the day. It was a falsely peaceful dawn, for the brunt of the night assault had been beaten back, despite the enemy's advantage of surprise, and now there was a lull.

Octavian stared out over the vast array of barbarian troops, machines and horses, wondering, above all else, how so many had assembled so quickly and with so little warning.

He sighed. Some questions were of more interest to historians. To the soldier, all that mattered was the here and now.

Here and now the Roman forces were surrounded and outnumbered.

"Not a pleasant sight, Octavian my friend."

He turned his head slowly and smiled. "An understatement, Septimus. Have you information on the commander's plans?"

Septimus shrugged. "Circumstances dictate plans. Picked men were dispatched under cover of darkness. Should they get through, they are instructed to request relief troops."

Octavian looked back over the enemy encampments. "Should they get through . . ."

Septimus said nothing.

After a moment, Octavian murmured, "It is many days' march should they get through. Many, many days. Can we hold out many days against that?" He gestured.

"Perhaps," said Septimus. "We

are, after all, Romans."

Octavian nodded. "Should Rome ever fall, my friend, it will not be for lack of courage in her soldiers." A pensive look crossed his features fleetingly. "Although it may be because she cannot communicate with the outskirts of her empire fast enough to send her soldiers where they are most sorely needed."

Misunderstanding, Septimus said, "Our men may well get through, Octavian."

Octavian looked at him again and grinned almost cheerfully. "Whether they do or whether they don't, it is going to be one hell of a fight."

Yoshisuke Aikawa shifted his weight to the balls of his feet as the abbot had taught him. Without conscious effort, he fell into a regime of rhythmic breathing which stilled the residue of tension in his soul.

As a monk, he was under vows never to carry arms, and had thus laid aside the short sword and dagger the Western Devils had given him. The gesture had created much amusement among the crowd.

He waited, watching his opponent.

The Celt, a huge man, black-haired and muscular, moved gracefully toward him. He carried a sword, but having watched Aikawa leave himself weaponless, had foregone his shield.

The crowd was laughing as he approached, waiting for the little man to break and run, waiting for the comedy to begin.

Aikawa waited.

When he was only a few yards away, the Celt said something in his native tongue, then something in such heavily-accented Latin that Aikawa could not understand it. Out of courtesy, Aikawa smiled and bowed. The Celt looked puzzled and gestured threateningly with his sword.

Aikawa concentrated until he felt the correct measure of his life force flow into his hands. He rubbed them together, feeling the hard ridges on the edges of his palms, the bone-like calluses on his fingers. He waited, half thinking of the years of training. *Your hands shall be axes. Your fingers shall be spears. Your feet shall be clubs.* For monks sworn never to carry arms, training was the only defense.

The Celt lunged forward with his sword, obviously hoping to make his tiny opponent break and run so that the comedy might begin. But there was no feel of death about him so Aikawa did not move and the sword point stopped short of his chest.

It was a development which did not altogether please the crowd. They were poised for high humor.

The Celt made another lunge and still Aikawa did not move. Somewhere in the auditorium, someone booed. An odd sound, almost reminiscent of a growl, grum-

bled from the Celt's throat and he lunged forward again. This time there was the feel of death about him.

Aikawa moved.

He stepped forward two swift paces to take the giant's sword arm by the wrist. Then he relaxed and allowed the man's momentum to break the bone. The Celt roared in agony and dropped the sword onto the sand of the arena.

Aikawa released the wrist and lunged a rigid forefinger through the rib-cage. Because the man was so tall he could not reach the heart to kill, but the move paralyzed his opponent long enough to allow Aikawa to reach the other arm and throw him heavily onto the ground.

Since the Celt was not wearing a helmet, he kicked the head sharply with the side of his foot, fracturing the skull and driving a sliver of bone into the brain.

Aikawa left the corpse and walked, as Cato had instructed him, to the emperor's box where he bowed politely.

The scent of herbs rose sweetly. A crescent moon had risen and now reflected in the stillness of the lake. Whatever threat there had been from the distant storm had passed, for even the silent lightning on the horizon had now stopped.

"The man is a threat," Livia told him with urgent softness. "He thinks too much. The populace call him a wizard because of his engines. The senate hates him. One day perhaps he will build an engine of war which might be used against Caesar. Who can tell the loyalties of a madman?"

Tiberius looked at her thoughtfully. "Loyalty is a rare enough thing in the Imperium."

At another time she might have risen to the gibe. As it was, she scented, distantly, a long-awaited victory over an old enemy. "Can you say, Tiberius, that he will not raise an army of dwarves trained to fight without weapons? Can you say that even the legions of Rome could stand against such . . . such . . . devilment?"

He turned away from her to hide an involuntary shudder. What had happened in the arena had indeed been more disturbing than he wanted to admit. So fast. So casual. Such power. So inexplicable. What could such men do if they were armed?

She hesitated, then pressed home another point. "Besides, Tiberius, you cannot afford to pay out so large a wager. As you reminded me at the Games, the imperial purse is far from limitless."

Without inflection, Tiberius asked, "What do you suggest I do?"

In the darkness, Livia smiled.

The sentry smiled. "Where are you off to in such a hurry, Master Xenophon? Where's all your nonsense about thunderbolts today?" A

lesser man might well have blamed the Greek for getting him into the trouble he had when last they met. But the sentry's humor was long and his memory short.

Xenophon stopped, although with the air of one who is impatient to go on. "I am instructed to attend our master, my friend," he said. "Perhaps he requires my advice on the latest of his engines."

The sentry grinned. "Perhaps."

Xenophon lowered his voice. "It is strange you should speak to me of thunderbolts. The rumors have it that Cato's latest engine can harness their energy."

"Only Jove can do that," the sentry remarked piously.

Xenophon's shoulders lifted in an exaggerated shrug. His right hand gestured toward the rods which traveled down the villa walls. "Was it not Cato's genius which devised rods to protect his mansion even from the wrath of Jove?"

"I would not speak against our master," the sentry said carefully, although more from fear than love, "but I have seen such rods on many noble houses."

"Perhaps, but that's not to say where they came from. Cato is of poor enough birth, yet he's the richest man in Rome." He hesitated. "Well, one of the richest. Where do you think his money came from, my poor soldier? I'll tell you." He tapped his head. "From here. From the engines he creates. The great houses have heat in winter in each room from a central furnace because of Cato. His design. And the public baths are his design as well. They say—"

"A mortal with brains may design public baths, but it takes a god to tame a thunderbolt," the sentry said stiffly.

"We'll see," said Xenophon and dodged past him into the house.

"If you don't wish his blood on your hands, let the gods decide," Livia urged.

Tiberius turned slowly to look at her. "What sort of talk is that, woman?"

She curbed her impatience for she knew, one way or another, she had him now. Very calmly she said, "Let us return to our quarters and cast lots. Should you win, you may take whatever action you decide against friend Cato. Should I win, then he must be put to death. The gods will decide which of us wins in the casting, and thus the gods will decide whether Cato lives or dies." After a moment she added, "It is my belief that the gods which protect Rome will not permit so dangerous a man to live."

"Perhaps he really is dangerous," Tiberius mused. "I cannot condemn a man for winning a wager, but perhaps he really is a danger to the State."

"You know he is," Livia assured him resolutely.

Tiberius took her arm and began to walk with her down the corridor toward their chambers. "But as you say," he murmured, "that is better left for the gods to decide . . ."

It was a strange engine, but then all Cato's engines were strange until one grew accustomed to them. Xenophon stared. There was a smallish treadmill, just about big enough for a man his own size. There were pads of silk and animal fur, pressing against burnished metal. There were rods like the rods Cato used to protect his house against Jove's thunderbolts.

Perhaps, after all, he was trying to harness the energy of the gods. Xenophon shuddered.

"Ah, Xenophon," said Cato. "Tardy as usual when there's work to be done. Come on, man, I'm impatient to test out my engine."

Xenophon walked forward wondering.

"Into the treadmill," Cato said. "And don't look so worried—I won't work you to death."

Xenophon climbed gingerly into the wheel.

"Now run," Cato instructed.

Xenophon ran.

For panting minutes nothing happened. Silk and fur rubbed against metal, the wheel spun and spun, Xenophon panted, but nothing happened.

"Faster!" Cato called excitedly. "Faster, man, faster!"

And then, with his reserves of breath almost gone, a thunderbolt arced between two rods with a crack that stopped Xenophon in his tracks, but did not, unfortunately, halt the treadmill which had more than enough momentum to deposit him unceremoniously on the tiled floor. The air smelled of ozone.

"Did you see?" Cato cried. "Did you see that, you uneducated Greek?"

Xenophon picked himself up gingerly. "Yes, sir, I saw."

"But did you understand?" asked Cato. "This is not an engine like my others. This is a generator of god-power—thunderbolt power! Who knows how that power might be applied. Do you know, Greek?"

"No, sir," Xenophon said. It seemed the safest thing to say.

"Rome may have new weapons," Cato said. "Thunderbolts to hurl at our enemies as Jove hurls thunderbolts at his." His eyes burned. "This power travels along rods and wires so quickly we do not have time small enough to measure it. Perhaps I can find a way of using it to send out messages. Think of that, Xenophon. Let those implications sink into your tardy mind! Rome could communicate with the farthest outpost of her empire. Communicate so quickly we cannot begin to imagine the benefits." He paused thoughtfully. "Except one. With such communication and Rome's legions, the empire would become impregnable. We would hear about revolts in the

most distant provinces before they had proper time to get under way. We could reinforce any garrison to deal with trouble. We could send reinforcements when they were needed, not rely on runners who do not reach us until too late." He laughed. "With Jove's power behind us, the Roman Empire will endure for ten thousand years!"

He turned, attracted by a slight commotion at the door. He watched, not comprehending, as Caesar's men marched across the tiled floor to arrest him.

"Have you heard the news, Octavian?" Septimus asked quietly.

Octavian shook his head. All news was bad news now.

"Our couriers—the men we sent out seeking reinforcements . . ."

"What news of them?" Octavian asked.

"A barbarian party under a flag of truce delivered their heads to the commander before dawn this morning."

Octavian sighed. "Without communications to a source of reinforcements we are doomed. There is nothing we can do."

"Except die like Romans," Septimus remarked bravely. ■

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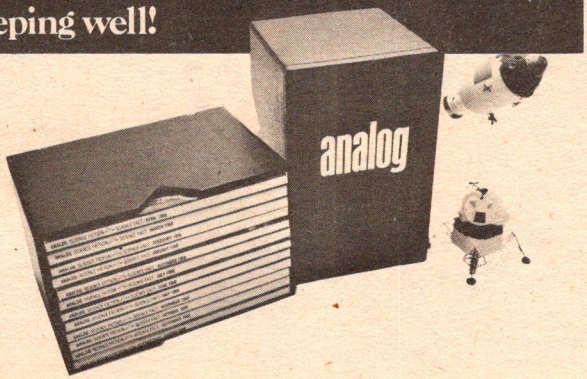

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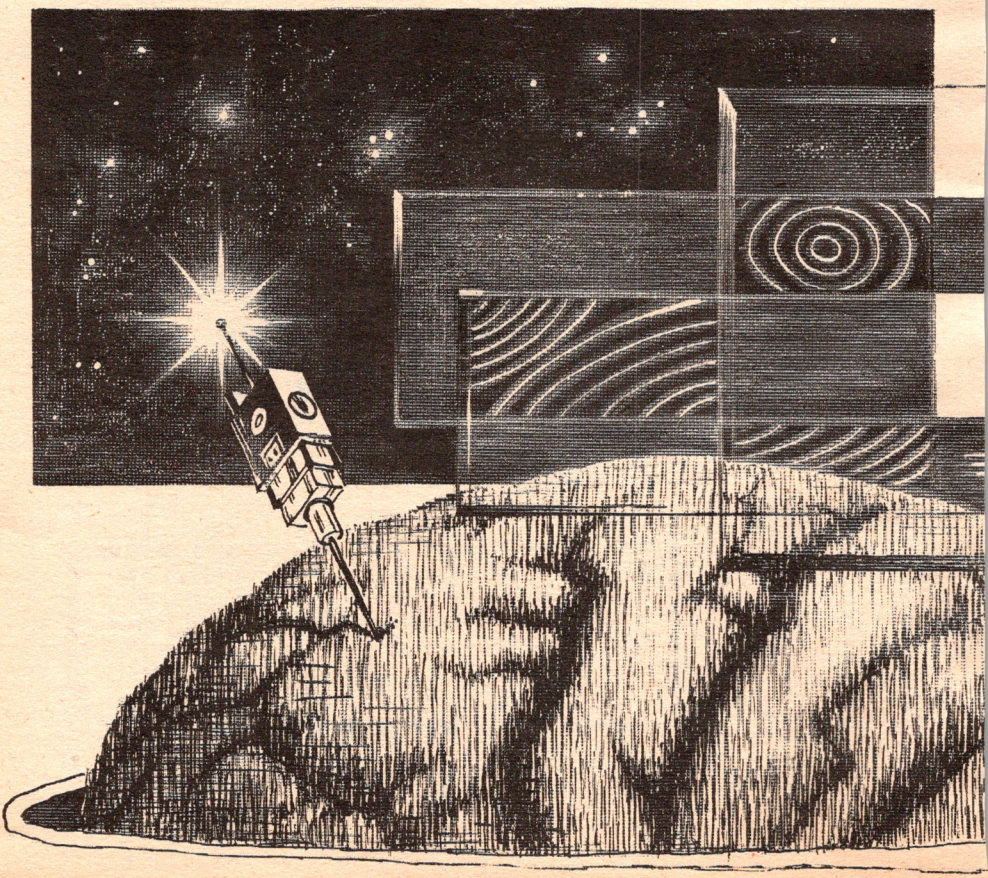


"Are they still there?"

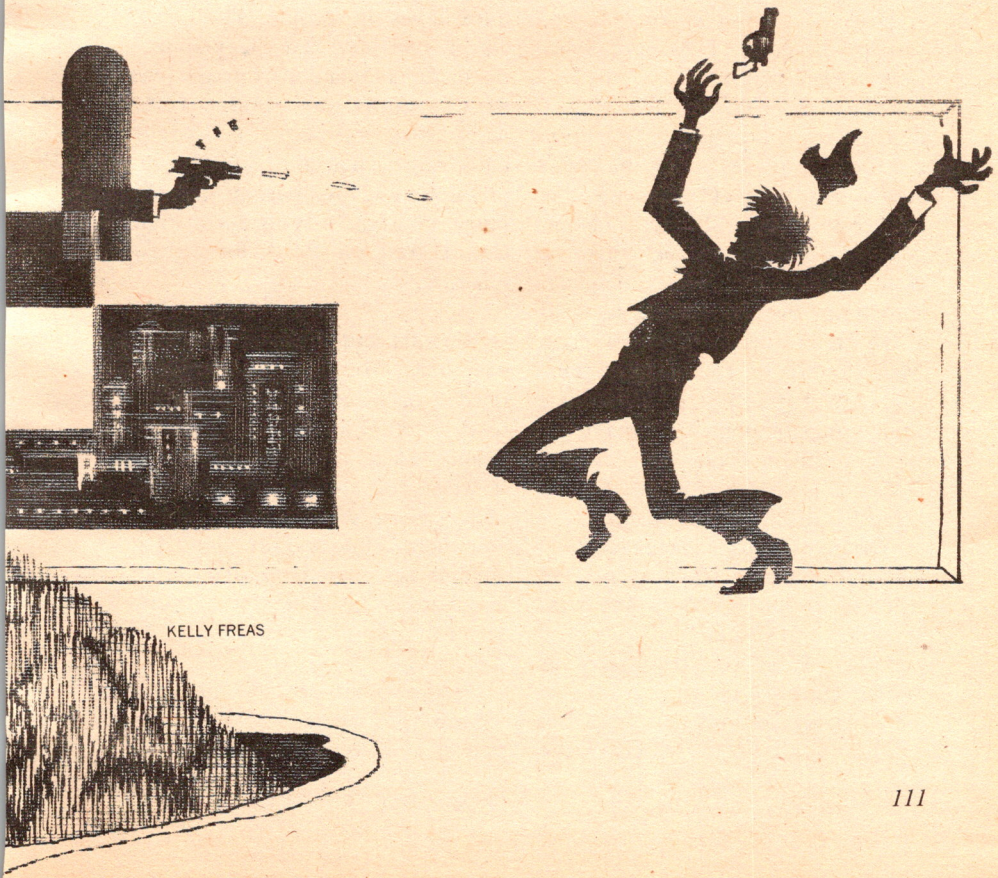
"Yep. Big as life."

Philo took the banked turn onto Highway 5, a straight stretch of asphalt running down the middle of California, leaning into the curve and feeling himself pushed deeper into the bucket seat. On the straightaway, he eased the turbine Porsche up to a hundred and twenty, glancing in the rear-view mirror. Headlights dwindled behind them. Philo relaxed. When they were far enough ahead, he would pull off and let the two men pass, chasing a phantom toward Los Angeles.

"How's Floyd?"

"Bearin' up," said the Maestro, craning toward the rear window, his expression apprehensive. The Maestro's Adam's apple, backlighted by the last rays of the sunset, jiggled when he talked, a perturbation Philo found distracting.

Philo glanced in the back seat. Floyd, the Maestro's apprentice, had a rubber ball locked between his knees, watching it. Floyd's head, itself an almost spherical ob-



ject with dark stubble all over it, tilted from side to side, scrutinizing the ball.

"What's he doing?" asked Philo.

"Waitin' for it to do somethin'."

"Oh."

Floyd was thirty-five.

"Watch your drivin', lawyer."

"Sorry," said Philo, returning his attention to the road. "Is he always like that?"

"Who?"

"Floyd."

"Like what?"

"Stuporous."

"Mostly," answered the Maestro, settling into the passenger seat. "'Cept when he ain't."

Philo had misgivings. He always considered imagination the hallmark of a good lawyer. With application, anyone could learn the law of a case. With diligence, anyone could put on an adequate case in court. To be more than adequate, sometimes just to get the facts, it took imagination. But hiring Maestro Mento to find Williams and Janet Toole strained even Philo's imagination. It bordered on lunacy. Milton Toole, Philo's overstuffed client, might as well have hired Floyd to try the lawsuit.

"Gonna get some sleep, lawyer," said the Maestro, tugging on the brim of his black fedora and slipping down in the seat.

"OK, I'll let you know if your friends catch us."

"Ain't my friends."

The more Philo watched the Maestro in action—or, more accurately, in inaction—the more his misgivings multiplied. The whole case stank from the beginning. The Maestro was only the last rotten apple on the compost heap. Toole was being sued for breach of contract and fraud. He probably did it. Fraud, or something like it, was Toole's style.

Philo had handled several product liability cases for Toole, successfully defending Master Toole, Inc. after a hologram unit they manufactured proved inclined to burn holes in people. Philo convinced one jury that the plaintiff's maimed hand and perforated liver were actually the result of the man's own misuse of the equipment rather than any defect in the product itself. As part of his fee, much to Toole's annoyance, Philo demanded an RCA hologram recorder.

The first stumbling block in the case was Toole—Toole The Innocent, or so he maintained. Toole disclaimed liability, demanding Right, Justice, The American Way. It was Toole's normal response to being served with a summons and complaint. Philo usually ignored it, waiting for something like reason to set in. Occasionally, reason only set in outside the courtroom on the day of trial.

Philo remembered the initial interview with Toole, whose features, pudgy and florid on the screen,

radiated righteous indignation.

"Action!"

"Calm down, Milt."

"I want action, Thompson!"

"Would a soft-shoe do?"

"Very funny. These people are out to break me and all you can do is make jokes."

"I have to know what we're talking about before I can give you any action."

Toole grumbled, unconvinced. His face approached the camera, enlarging, filling the screen from ear to ear. He spoke quietly, intensely.

"Find Williams."

"Who's Williams?"

"My honcho."

Aside from being Toole's honcho, Williams headed development and production in Toole's new plant. The plant was so new even Philo had never heard of it. The buildings and production machines were already in place. Production was scheduled to begin in five months with the first units rolling off the line in six months.

"What kind of units?"

"Didn't you read the papers I sent you?"

Philo faintly remembered a thick envelope, untouched on his desk. "No."

"It's all in there. Except the plans, of course. Williams took the plans with him." Toole's mouth tightened. "If I ever catch that—"

"Plans for what?"

"My transmitter, Thompson! Where the hell have you been?"

"OK, OK, I'm with you now."

In the light of Toole's agitated state, Philo considered it imprudent to probe further. Legally, a transmitter was just a transmitter. He could fill himself in on the details later.

"What about Williams?"

Williams, a Cal-Berkeley PhD in physics, knew the transmitter from drawing boards to circuit boards. He was the only man with a complete picture.

"What about you?"

"Me?" Toole laughed. "I just build 'em. I don't *have* to understand 'em." He snorted a few times, adding, "That's capitalism, Thompson."

"I suppose so."

Philo had long ago accepted Toole's extreme political views. Toole considered himself a self-made man. His politics, fiercely individualistic, would have built railroads in the Nineteenth Century. In the Twentieth Century, they built Master Toole. Philo had once quipped that Toole considered Adam Smith a left-wing radical. Like most self-made men, Toole considered himself as coming from a humble background. He depreciated the value of his MBA from Harvard Business School and stressed the sacrifice and determination required to turn his "basic million," donated by his father, into the five hundred million that capitalized Master Toole. The cor-

poration provided Toole with a "comfortable" living: twenty million a year. The overseas investments were entirely aside from Master Toole, generating enough income to pay off several former wives and Janet. Toole liked to lecture Junior Chambers of Commerce, waddling to the podium and invariably addressing the bright young businessmen on his favorite topic, "Get off your butts and *Succeed!*" Toole considered most people lazy. He had done it. So could they.

"Where's Williams?" asked Philo.

"Thompson, if I knew that, would I ask you to find him?"

"Probably not."

Toole grunted. "The day before I got hit with this lawsuit, he disappeared."

Philo nodded noncommittally.

"With Janet."

"Ahh," said Philo, smiling. "You're sure he left with Janet."

"They both left at the same time."

"Coincidence?"

"I don't think so. They'd been seeing each other regularly."

"Do you have Williams' personnel file?"

"Yes."

"Send it over."

Philo thought about Janet Toole, a brunette in her twenties. Philo had coveted her for years, never getting closer than "Good morning, Mr. Thompson." Lately she had been tending toward plump, following her father's model. Philo still enjoyed watching her walk, usually away from him.

"What does Janet have to do with the transmitter?"

"Nothing. She's on the payroll because it's cheaper to give her an allowance before taxes. She thinks she has to do something for it."

"Oh."

"Anyway, Thompson, get on it." Toole hung up.

Philo got on it. He employed an investigator named Shaw, a passed-over major from Army Intelligence who usually dug up something of value, though he seldom appreciated its worth. Philo employed him from time to time when a case required a full-time investigator.

Shaw's report arrived two weeks later. It proved disappointing. After a background check on both subjects, including an impressive list of credentials for Williams, the report drew a blank. Shaw had obtained the passenger lists of departing flights on the day Williams and Janet Toole disappeared. They were listed on four simultaneous flights, each heading in a different direction. Hawaii, Portland, New York, and Orange County, California. Only the Orange County flight was full. Neither Williams nor Janet Toole had relatives in Orange County. The trail stopped at touchdown.

Philo informed Toole.

"I'm ruined!" exclaimed Toole and hung up.

"Ruined," said Philo, glancing in the rear-view mirror.

"What was that, lawyer?" asked the Maestro, slouching in the seat, fedora covering his eyes.

"Nothing. Just something someone said."

It was difficult to imagine Toole ruined. The Modesto turnoff sign flashed past in the night. Philo slowed the Porsche.

"We'll pull off here."

The Maestro pushed up the brim of his fedora, opening his eyes, their whites flashing briefly in the light of the overhead sign.

"Where's here?"

"Modesto."

"Godforsaken place."

"We'll let your friends get past and then proceed at a more reasonable pace."

"I tol' you, they ain't my friends."

Ain't my friends either, thought Philo. A five-hundred-dollar dent in the rear fender proved it. Philo first noticed the car, a black four-door Chevrolet, when they left his office in San Francisco, heading for Orange County. Philo wanted to investigate for himself. All the flights for three days were booked. He decided to drive.

The Chevrolet had followed him through the slow city traffic. He lost sight of it on the Bay Bridge, picking it up again when they were out of the Bay area. Crossing over on Highway 50 to pick up 5 for LA, the Chevrolet pulled up and blinked its lights. Philo moved over to let it pass. When its front bumper was next to Philo's rear fender, it swerved, smashing into Philo's Porsche and pushing both cars onto the dusty shoulder of the road. It could have been an accident.

The Chevrolet fell back, as if preparing to stop for an exchange of driver's licenses and insurance companies. Philo, leaving the engine running, pulled over and stopped. The Chevrolet eased up behind him. Philo watched in the rear-view mirror. Two men got out. One of them, lanky and well over six feet, carried a pump shotgun. Philo stepped on the gas, illiciting a "Hey!" from the Maestro and almost throwing him into the back seat with Floyd, who seemed to have noticed neither the men nor the stop.

The men scrambled into their car and pursued, shrinking momentarily in the rear-view mirror, then enlarging and settling to a constant pair of headlights behind them. When he was sure none of the running gear was damaged, Philo let out the Porsche. The Chevrolet disappeared.

The smooth hiss of the tires on asphalt gave way to the crackle of the gravel shoulder. Philo shut off the lights and stopped, popping open the door. He left the engine idling. Cold night air filled the car. He got out and examined the dent,

an ugly-looking scrape that showed bare metal.

"They always do it just after a wax job."

"What was that?"

"Nothing." Philo glanced at the freeway. Few cars were passing. "Give me those binoculars in the glove compartment."

Philo heard the glove compartment click. The Maestro's hand, veined and knobby, protruded from the open car door, holding the binoculars. Philo took them. Resting his elbows on top of the car, he focused the glasses down the freeway, switching to night vision. The field of view changed from black with a few freeway lights to chartreuse with the freeway and farm landscape clearly defined. They had passed two cars before they lost the Chevrolet. Presumably, the Chevrolet would also have passed them. It should be the next car.

"See 'em?"

"Not yet."

Two chartreuse headlights appeared on the freeway, visibly growing.

"There they are."

The headlights enlarged. A right turn-signal came on.

"Law abidin', ain't they," said the Maestro, watching through the rear window.

Philo got in, dropping the binoculars into the Maestro's lap.

"Put these away."

The Porsche was in drive and moving before the door closed. The tires slipped on the gravel and bit on the asphalt.

"You better strap Floyd in."

The Maestro turned around in the passenger seat, leaning his stomach against the headrest and searching for Floyd's seatbelt in the dark.

"You sure that's them, lawyer?"

"You want to hang around and find out?"

The Maestro glanced out the back window.

"Damn fools."

"What's the matter?"

"They're drivin' with no lights on. Gonna hurt somebody."

"Us, probably."

II

Philo glanced in the rear-view mirror. Only the occasional dimming of a light in the background indicated pursuit.

"Why don't you shut off our lights, lawyer?"

"They'd see the brake lights."

"Don't hit the brakes."

Philo shut off the lights. Rural intersections flicked past, faintly-lit oases on the road. With each intersection, Philo's grip tightened on the wheel. He hoped the Modesto farmers kept their tractors in the barn at night. For that matter, he hoped they never drove anything at night.

The probing headlights of a car on a side road, illuminating the

Maestro's face like a weak flashbulb, startled him.

"This is suicide, Mento."

"Yep."

Philo glanced at him, annoyed. "It was your idea."

"I got another idea."

"What's that?"

"Why don't you turn on our lights."

Philo switched on the headlights, simultaneously stepping on the gas. Behind them, headlights came on. An intersection appeared in the high beams, set at a forty-five-degree angle to the main road. Philo decided to take the crossroad.

"Brace yourself."

Philo cranked the wheel to the right. The Porsche darted onto the road.

"Damn it! Dirt!"

A plume of dust ascended behind them, obliterating any view.

"They can see that for miles," said Philo.

"Yep. Pretty dumb." The Maestro chuckled.

"It's your neck, too."

The chuckling stopped.

The Maestro's behavior, as if the man with the shotgun were some kind of joke, annoyed Philo. Most things about the Maestro annoyed Philo. Even the Maestro's name, Maestro Mento, annoyed him. It was Philo's own fault. He had been unable to control Toole. One of the most important aspects of law practice was client control. In personal injury cases, it meant dampening the client's expectation of receiving two million dollars for his stubbed toe.

In criminal cases, it meant convincing a client to take a plea of guilty to discharging a weapon within the city limits instead of trying and losing on a charge of assault with intent to commit murder. In Toole's case, it should have meant convincing Toole to forget about the Maestro. But Toole, impatient for action, had remained uncontrollable. Toole wanted Williams. Toole wanted his daughter. Philo's methods had turned up little. Toole, no doubt with a heavy sigh at having, after all, to do it himself, had decided to use his own methods. He had dragged Philo, protesting, into a cold October evening to meet the Maestro.

"Listen, Toole," Philo had said as Toole led him out of his office to the waiting limousine, "I'm only here tonight because I have work to do. I do have a few other clients to worry about."

"This *is* work, Thompson. Wait until you see this guy."

Philo waited, sipping a gin rickey from the back seat bar in Toole's car. Toole, his bulk wedged in one corner of the back seat, a dark mass whose face was occasionally lit by a street light, sipped a Scotch and soda.

"You'll love this guy."

"I'd better."

"You will, Thompson." Toole's voice sounded excited and boyish,

a quality Philo never associated with the magnate.

"What's he do?"

"You'll see. Drink up. We're almost there."

Philo glanced out the window. The neon lights of the Tenderloin district, flashing assertively, confronted him: BIG AL'S . . . NAKED . . . THE CONDOR . . . NUDE . . . CAROL DODA'S . . . RAW.

"You're sure we're in the right neighborhood."

"I'm sure." Toole leaned forward and pushed the partition button. The glass plate separating passengers and driver slid down. "Pull over anywhere around here, Simon. Then drive around the block until we come out."

Simon pulled over. Philo got out, replacing his glass on the bar. Toole followed, his bulk extruding through the car door. He slammed it behind him. Pedestrian traffic on the sidewalk was heavy. Passersby jostled them. Philo tried to remain conscious of his wallet, pressing it against his ribs with the inside of his upper arm.

"How long is this going to take?"

Toole glanced at his watch and shrugged. "I don't know. Half-hour. Hour. It depends."

"Why didn't you have Simon park if it'll take that long?"

Toole looked at him, incredulous. "Do you know what they get for parking down here?"

"No."

"Plenty."

They started down the street, Toole leading and Philo following close behind.

"It would be cheaper than having him drive around for an hour."

Toole waved off the question, flapping his pudgy hand. "It's only money."

"Yours, fortunately."

"Ah, there it is."

Ahead of them, a neon sign jutted from the side of a building, overhanging the sidewalk. It displayed a pulchritudinous female body, nude, attached to a cat's head. The figure, continually tinting through a spectrum of colors as it gyrated, stood on letters reading "The Pussykat Klub."

"The Pussykat Klub?"

"Thompson, I'm not responsible for the haunts of genius."

"Genius?"

"You'll see."

They pushed through a hanging black curtain. A smiling maitre d', bowing slightly as he approached, recognized Toole. Music blared with heavy emphasis on drums. On stage, a girl bumped and ground, naked, nude, and otherwise unencumbered.

"Where would you like to sit tonight, sir?"

"You've been here before?" inquired Philo.

Toole ignored him. "Up front."

"I'm sorry, but all the front tables are full, if—"

"Up front," repeated Toole, passing the maitre d' a folded bill.

Philo saw two zeros. There could have been more.

"Up front," said the maitre d', disappearing into the crowd. Several waiters approached a group of men next to the runway—awestruck, craning men. Philo looked around at the room, its walls painted with fluorescent patterns and illuminated by ultraviolet light.

"Nice place."

After some altercation, the men moved to a table farther from the stage. The maitre d' reappeared.

"This way, sir."

When they were seated, Philo watched the dancer.

"Genius," said Philo.

"What?"

"I said, that's genius!" yelled Philo, trying to override the din.

"Not her, Thompson!"

"Not her?"

"No! Don't pay any attention to her!"

A high heel, part of the only garment on the body, clicked on the stage inches from Philo's ears.

"It's difficult not to!"

"What?"

"Forget it!"

Four more girls joined the dancer on stage, each taking a mechanical, dispirited strut out the runway and returning to the group. A waiter brought drinks.

"Let's get out of here, Toole!"

"Not yet!"

The band crescendoed. The girls bowed. The audience, mostly men Toole's age, hooted. The girls trotted off-stage. Philo wondered how he let himself in for this. Many of his clients, particularly the wealthy ones, had peculiar pastimes. Philo shared few of them. He preferred his women one at a time, in private, and someone he knew. The house lights came up.

"Can we go now?"

"Shhh. This is what we came to see."

The maitre d', doubling as a master of ceremonies, walked out from the wings, greeted by hoots and boos.

"*Ladies and gentlemen*," he began.

"Do you see any ladies in here?" asked Philo.

Toole ignored him.

"*I would like to present, for your enjoyment while the girl—*"

Hoots and whistles interrupted.

"*—while the girls are changing costumes . . .*"

"Costumes?" said Philo.

"*. . . Maestro Mento the Magnificent Mentalist and his apprentice, Floyd!*"

Boos, hisses, and shouts of "*Bring on the girls!*" responded.

The maitre d', evidently afraid of pummeling, retreated into the wings.

Maestro Mento, carrying a small table like a magician's, came on stage, followed by Floyd, wide-eyed and staring. Floyd looked around at the crowd. Both were dressed in black with sequins dotting them. The crowd responded.

"*Get dat bum off the stage! . . . Bring back Bubbles! . . . I want my money back!*"

"Is it always like this?" asked Philo.

"It's worse on weekends."

The Maestro placed the table a few feet from Philo and Toole. Floyd continued to stare at the audience, looking around as if searching for someone. Gradually, the crowd quieted.

"Ladies and gentlemen," began the Maestro. "I ain't really no showman—"

"*Then what are you doing up there?*" yelled someone from the back of the room.

"A good question," said Philo.

"I'm jus' makin' a livin', readin' minds."

He had their attention. Satisfied they would remain quiet, the Maestro held up two half dollars.

"First, I'll put these here half dollars over my eyes."

He put a half dollar over each eye, squinting to hold them in place.

"Then I'll put this here . . ." He fumbled on top of the table, patting it with both hands. "Where is that there—ah, here it is . . . this here tape over the half dollars."

He held up the tape, dangling it for the audience to inspect, then taped the coins into his eye sockets, smoothing the tape around his nose and temples. He patted the table again, encountering a mask without eyeholes and holding it up.

"Now I'll put on this here steel mask." He removed his black fedora, dropping it to the floor. Floyd looked at it.

"*Why don't you put a bag over your head?*" yelled the man who wanted Bubbles to come back.

"I couldn't breathe."

"*That's the general idea!*" The man laughed, yucking and looking around for support. Getting none, he sat down.

"Now I'm gonna receive your thoughts and innermost secrets and tell 'em to my apprentice Floyd here. Where are you, Floyd?" The Maestro felt around in the air until he encountered Floyd's bald head, holding onto it as he would a crystal ball. "And Floyd will tell all you folks. You all got that?"

"*We got it, mental midget!*"

"I hope the wit improves with the act," said Philo.

"Shhh," said Toole.

The Maestro, after reaching around Floyd's head to find the ear, whispered in it. Floyd, still wide-eyed, his round head especially globe-like in the harsh stage lighting, moved his lips.

"*We can't hear him!*"

"Speak up, boy," said the Maestro.

Floyd spoke up. His voice seemed vaguely familiar to Philo.

". . . *That old fake couldn't read a mind if he had it in front of him like a paper. I'll think of the worst thing I can, something nobody knows but me. How about that*

money I got from the till when . . . wait a minute . . . what's that kid saying? I—"

The man who wanted Bubbles stood up, shaking his fist at the stage. "You old fake! I don't know how you found out about that but it ain't true!" The man looked around at the crowd, pleading. "It ain't! He's lying!" Finally he bolted from the room, cursing the Maestro and denying his guilt.

"That's genius, Thompson," whispered Toole.

"That's a plant in the audience."

Toole grunted, annoyed at Philo's cynicism.

They watched for another ten minutes. The Maestro whispered to Floyd who relayed someone's "secret" to the audience. Most of the time, the "secrets" made little sense, more like the inside of a drunk's mind than a malefactor's closet. Philo remained unimpressed. When the maitre d' came back on stage and led the Maestro, still blindfolded, off toward the wings, trailed by Floyd, Toole stood up. As if on cue, the band struck up, leading into a bump or a grind. Toole led the way through the closely packed tables, excusing himself frequently because of his bulk. On the street, Philo inhaled deeply, appreciative of the clear night air. They flagged down Simon and started back toward Philo's office.

"What did you think?" asked Toole, settling back into his seat.

"About what?"

"The Maestro."

"A fake."

Toole laughed. "That's what I thought, too."

"But you don't now?"

"No. It happened to me."

"What happened to you?"

"He picked on me one night." Toole shifted on the leather car seat. It squeaked under him. "It was extremely embarrassing."

"Milt, those guys work the same way newspaper astrologers do. You say something general and it's bound to fit someone. If it doesn't, you act like the guy is keeping quiet."

"It wasn't general. It was specific. Very specific. Too specific. Names, dates, even exact amounts of money and who they were paid to. And the particular transactions he was talking about *no* one knew about. I walked out. Later, when I cooled off, I realized Mento was what we wanted. If he can pull things like that out of my mind, he can find Williams."

"That is, if he can pull things like that out of anyone's mind."

"He can."

"I'll bet."

They arrived at Philo's office. After Philo got out, Toole lowered the window.

"Think about it, Thompson. I'm going to hire him whether you agree or not."

Philo, recognizing the futility of trying to dissuade Toole, gave up.

"It's your money. By the way, Milt—"

"Yes."

"Do you go to the Pussykat Klub often?"

Toole's forehead wrinkled. "Why do you ask?"

"Just curious."

The window slid up, sealing in Toole.

A dust cloud ahead of them pulled Philo's attention back to the road. He slowed the Porsche. He could see nothing of the vehicle making the cloud.

"Why you slowin' down?" asked the Maestro.

"There's a car in front of us."

"Oh."

Philo, tempted to say, "Pretty dumb," restrained himself. The car ahead gave him an idea. If he could turn in somewhere, the Chevrolet might follow the car ahead, mistaking it for Philo's.

"Hold on."

He fishtailed into an even smaller side road, simultaneously switching off the lights. He shut off the engine, coasting to a stop and opening the window. He listened intently.

"Where's—"

"Shhh."

He could hear the Chevrolet on the road. He glanced in the rear-view mirror. Light glowed in the dust at the crossroads.

III

The light at the crossroads died.

"I think they're gone."

Philo looked out the front window. They were parked in a farmyard, a dirt area between a wood-frame farmhouse and the yawning doors of a barn. A rickety picket fence separated the dirt of the front yard from the dirt of the access road. The farmhouse was dark.

"You and Floyd wait here," said Philo, unbuckling his seatbelt. "I'm going back to the road and make sure they're gone." He nodded toward the farmhouse. "Then we'll see if we can rouse anyone in there. They probably have a phone."

"What do you want a phone for?"

"I thought I'd call the police."

"Oh."

Philo opened the door, then closed it, remaining inside. A better idea occurred to him. The Porsche, clearly visible from the road, invited inquiry. He started the car and crept up to the barn. It was empty. He pulled inside and shut off the engine.

"Dark in here," said the Maestro, looking around.

"You're not afraid of the dark, are you?"

"Nope."

"Good."

Philo reached into the glove compartment, moved aside the binoculars and extracted his .38, un-

wrapping the rag around it. The Maestro watched him, his expression impassive.

"Is something bothering you?"

"Does that there little thing work?"

"Of course it works."

The Maestro shrugged. "Better than nothin'."

Philo flipped out the cylinder, noting the five cartridges. He got out, tucking the .38 in the waistband of his pants. He once shot several beer cans with mediocre accuracy. He only carried it because of an assault by the irate husband of a divorce client. The husband, built like a halfback, had charged Philo in the parking lot outside his office, waving a .22 automatic. After several wild shots, plinking off the hood of Philo's car and chipping cement off a parking lot stanchion, Sweet Reason prevailed and the husband went home. Philo bought the .38 the next day, unsure whether Sweet Reason would prevail permanently.

He left the barn and walked back toward the road. Night air crept through his suit, chilling him. He stopped at the road, looking both ways. He could see nothing of significance. Momentarily, something bothered him. He looked around, examining the bushes. After several seconds of intent listening, he recognized it. Quiet.

"City boy," said Philo, smiling.

He decided to wait at the road for a few minutes. When the gunmen discovered their mistake, they would backtrack. Besides, being with the Maestro bothered him. The Maestro, even if he had no connection with "his friends" in the Chevrolet—a proposition Philo would only allow hypothetically—would be little use if things got close. Philo blamed himself for the Maestro's presence. If he had been firmer with Toole, the industrialist would have dropped the idea. Philo remembered the conference when Toole hired Mento. The Maestro had dragged Floyd to the interview, towing him into Philo's office by one hand and depositing him on the couch in the corner, a vacant-eyed lump. Toole, occupying Philo's desk, had scrutinized the Maestro, carefully noting his nightclub costume.

"Sit down, Mr. Mento," said Toole, indicating one of the client chairs in front of Philo's desk. "If that's your name."

"It'll do."

Philo stood to one side, his elbow hiked on a file cabinet, sipping coffee.

"We've got a proposition for you, Mento."

The Maestro sat down, slouching. He crossed one ankle on his knee and watched Toole from under the bent brim of his fedora. From Philo's angle, the curve of the fedora matched the curve of the Maestro's nose, adding an especially hawk-like quality to it.

"What kinda proposition?"

"We want you to find someone."

"I ain't no missin' persons bureau."

"We're aware of that. A missing persons bureau probably couldn't help us anyway."

"Who?"

"Who what?"

"Who do you want me to find?"

"His name's Edward Williams."

"I knew an Ed Williams once. Back in Chi-town. Fat fella with a pierced ear. But this ain't him."

"How do you know?"

"He died."

"Oh."

Philo, noticing Toole's omission, mentioned Janet Toole.

"Who's Janet?" asked the Maestro.

"My daughter. But don't worry about her. It's the physicist we're concerned with." Toole glanced at Philo as if to explain his statement. "Williams is irreplaceable."

Philo nodded without saying anything. Toole never liked Janet, the child of his fourth and shortest marriage.

"Why do you want him?" asked the Maestro.

"Is it important?"

"Don't know. Maybe. Maybe not. Can't tell till I hear."

Toole explained about the lawsuit, the transmitter and Williams, keeping the details vague enough to leave the Maestro without any useful information if he declined the offer.

"If I don't get Williams," concluded Toole, "I can't deliver on the contract. If I don't deliver on the contract, it's all over." Toole made a thumbs-down gesture.

"What are they suin' you for?"

"Fraud, among other things."

"Did you do it?"

"No!" exploded Toole, suddenly animated. He leaned aggressively across the desk. "I did *not* do it, or *any* thing! Do you understand that?"

"Just askin'."

Toole grunted, glancing at Philo and grunting again. "Did I do it? Humpf."

"What's this here transmitter?"

"You certainly have a lot of questions, Mento."

"I gotta know what I'm gettin' us into."

"Us?"

"Me and Floyd."

Toole looked at Floyd. "Oh. I'd forgotten about him."

"Most folks do. Where I go, Floyd goes."

Toole asked Philo to get the "box" in the receptionist's room.

"What box?"

"Just get it, Thompson. Ask the girl."

Feeling faintly like a messenger boy, Philo walked down the hall to the receptionist, a moonfaced girl with bangs. He asked whether Toole had left a box. She nodded at a plywood box on the seats of two chairs.

"What is it?" asked Philo.

"I don't know, Mr. Thompson."

"Did you look inside?"

She balked, intimidated by the accusation. "No, sir."

"Let's look."

Philo flipped the two hasps at either end of the box, lifting the lid. The receptionist peered over the edge of her desk, watching him. He could make nothing of the contents. A ring a foot in diameter, apparently made of concrete, lay next to what looked like a small display panel for a computer.

Philo shrugged. He closed the case, snapping the hasps and lifting it. He listed down the hall under its awkward weight. Toole, he reflected, must be stronger than he looked. He carried the box into his office.

"Ah, Thompson. Took you long enough."

"It's heavy."

"Just put it on the desk."

Philo set the box on the desk, returning to his coffee on the file cabinet. Toole busied himself extracting objects from the box, his expression like a child unwrapping a Christmas present.

"What is it?" asked Philo.

Toole frowned, pulling in his face. His double chin grew momentarily. "Didn't you read those papers I sent you?"

"Not yet, sorry."

"Then pay attention. *This,* Thompson, is my transmitter."

"Funny-lookin', ain't it?" said the Maestro.

Toole frowned. "It's beautiful."

Philo thought he could hear the jingle of money in Toole's voice.

"Maybe," said the Maestro. "But it's still funny-lookin'."

Toole attached an inch-thick cable to a connector embedded in the concrete ring, running the free end to the computer in the box. He rested the ring near the edge of Philo's desk, standing it on end and releasing it, balanced.

"That, gentlemen, is the focusing ring. Inside that concrete is a bar of solid tantalum."

"Hm-m-m," said the Maestro, unimpressed. Philo, watching, nodded. He, too, had seen concrete before. Floyd, immobile on the couch, stared straight ahead. Toole's face, assembling the equipment, showed a boyish expression. Philo suspected that the expression—unrestrained enthusiasm—had more to do with Toole's success than the hard-bitten attitude he usually displayed. It took energy to build a manufacturing empire the size of Toole's. Only enthusiasm could supply that kind of energy, Harvard Business School notwithstanding. Toole looked up from the transmitter, satisfied.

"There. Is there an outlet in here?"

"We use candles," said Philo, pointing to a socket in the baseboard behind Toole.

"Good. Good."

Toole plugged in the linecord that trailed from the plywood box. Nothing happened.

"Nothin's happenin'," said Mento.

Annoyed, Toole looked at the Maestro. "I have to turn it on."

"Then turn it on," said the Maestro.

Toole touched the small display with a pudgy finger.

"Still nothin' happenin'."

Toole smiled. "Ahh, but it is. Thompson, do you have something long and less than an inch in diameter?"

"There's a letter opener in the drawer."

Toole opened the drawer at his stomach, lifting out a red plastic letter opener. He held it up like a magician before a trick, allowing both Philo and the Maestro to inspect it. He started to show it to Floyd, thought better of it and proceeded with the demonstration.

"Get around here where you can see, Thompson."

Philo walked around his desk, stationing himself next to the ring. In the center of the ring, the air shimmered in a circle an inch in diameter like a transparent half dollar trying to materialize. Toole, holding the letter opener like a sword, eased it toward the bull's-eye. The tip disappeared, vanishing as though into liquid.

"Knew a magician once could do that," said the Maestro.

"But could he do *that*?" said Toole, pointing at a spot in the air two feet in front of the bull's-eye. The red tip of the letter opener stood in mid-air. Toole worked the letter opener back and forth through the shimmering hole, watching a corresponding length of red tip protrude and retract. Toole's eyes, sunk in his fat cheeks, showed delight.

"Yep."

"Yep, what?" said Toole without looking up.

"He could do that, too."

Toole grunted.

"Did it with mirrors."

Toole extracted the letter opener, his delight extinguished.

"Could he do *this*?" said Toole, angry. Toole poked his index finger through the bull's eye. It disappeared. An inch and a half of stubby finger appeared in the air. Toole wiggled it.

"Yep."

Toole withdrew the finger, glaring at the Maestro.

"'Cept he did it with a head. The Great Geel-bear and his guillotine. Them mirrors is pretty clever."

"Mirrors," snorted Toole, jerking the plug out of the wall.

Philo continued to stare at the spot where Toole's finger had floated.

"What is this thing, Milt?"

"If you'd read your mail, you'd know," snorted Toole.

Philo ignored the remark, inspecting the ring. Toole began packing the cables into the case, grumbling about mirrors. Finally, he packed the ring.

"What is it?"

"A transmitter. I told you."

"What kind of a transmitter?"

"A matter transmitter." Toole closed the box, snapping the hasps. He looked up at Philo, regaining some of his enthusiasm. "The ring separates matter into subnuclear particles, projects them and reassembles them. This is only a model, but my big ones are going to put Detroit out of business! And the airlines, too, for that matter!" Toole's expression turned sour. He glanced at the Maestro. "Mirrors."

Philo saw the possibilities. Enlarged versions of the model on his desk, placed at strategic points, would revolutionize transportation. Revolution was probably too mild a word. Philo brought his thoughts up short, remembering the lawsuit. Toole was being sued by experts. Presumably he had performed this same demonstration for them. It had convinced them sufficiently to submit orders. Now they claimed fraud. Knowing Toole, Philo decided to reserve judgment, remaining skeptical until he had a clearer picture.

"What's that there mirror trick got to do with Williams?" asked the Maestro.

Toole, ignoring the mirror comment, explained Williams' relationship to the transmitter: he was the only man, aside from the inventor—someone named Jenson—who understood the transmitter well enough to see it through production.

"Why don't you just hire the inventor?" suggested Philo.

"I tried. He won't do it."

"Why?"

"He made a full-scale prototype in Mexico and something went wrong."

"What?"

"I never quite got it straight. Williams says it doesn't have anything to do with the transmitter itself."

The Maestro, who had been thinking things over, shifted in his chair.

"OK, I ain't guaranteein' nothin', but I'll try and find this here Williams fella."

"Good. Thompson, give him all the help you can."

Philo hesitated, deciding whether to register his protest.

"Unless you have a better idea," added Toole.

"No."

That, reflected Philo, checking in both directions on the road to satisfy himself the gunmen in the Chevrolet would be gone a while, was his mistake. He should have protested loud and clear. Either the Maestro went or Philo went.

"Hesitate and all is lost."

Philo started back toward the barn, looming darkly in front of him. He mulled over recent events. The farmhouse still seemed unoccupied. He approached the barn doors.

"Maestro, bring Floyd and we'll see if anyone's home."

The Porsche rocked back and forth. Philo could see the Maestro's hat moving through the rear window. He was unbuckling Floyd. Whatever Philo thought about the Maestro, the mentalist had convinced Toole.

"Hey, lawyer," yelled the Maestro from inside the car. "I can't get this here thing loose!"

Philo walked into the barn and peered inside the car. The Maestro was fumbling with Floyd's seatbelt.

"Let me do it," said Philo, reaching in and unfastening the seatbelt.

If the Maestro was a fake, he was a good fake. He maintained the illusion of a country hick and his idiot assistant without a crack in the façade. Who would think either of them had the brains for deception? It was doubtful whether Floyd even possessed the organ. The Maestro's, covered by his fedora, was probably defective.

"Can you help me here, lawyer?" said the Maestro, his posterior crowding out the driver's side of the car. "My coat's caught on the steering wheel."

Philo reached in and freed the Maestro's coat.

"Thank you."

"Don't mention it. Why, if I can ask, are you getting out the driver's side?"

"Ain't no other way to get the boy out."

The Maestro backed out of the car, pushing the driver's seat forward. He was holding onto the front of Floyd's windbreaker with both hands, yanking him out. The process reminded Philo of the extraction of a giant tooth.

"Stubborn as a mule, sometimes."

At last the Maestro succeeded in removing Floyd from the car. They started toward the darkened farmhouse, Philo leading and the Maestro towing Floyd.

"Come on, boy," said the Maestro behind Philo. "There ain't nothin' to be afraid of. The lawyer here'll protect you. He's got that there peashooter of his."

Philo stepped up on the porch and knocked on the front door. No one answered. He knocked again. After several seconds, he tried the knob.

"Locked."

Thinking over what to do, Philo heard something.

"What's that?"

"What?"

"That noise."

"Sounds like a car."

"I'll give you one guess who it is."

"Who?" guessed the Maestro.

"Never mind. Wait here. I'll go around and see if anything's open."

"Ain't that burglary, lawyer?"

"Necessity."

IV

The car passed, the sound of its engine fading in the night. Philo circled the house, checking win-

dows and doors. The Maestro still worried him. The day Toole hired the Maestro, Philo considered having Shaw investigate his background. He suggested the idea to Toole, who laughed, inquiring what Philo hoped to find. Unable to answer, Philo dropped the idea. He regretted it. Something about the Maestro eluded him. Carpelec, Inc., the plaintiff in the lawsuit against Toole, had proved to be a front, listing a lawyer named Lewis and two straw men as incorporators. Shaw still had to discover the company's real owners. Carpelec, the smallest of the companies ordering transmitters from Toole, contracted last and sued first. For all Philo knew, the Maestro could own it. Or Floyd.

"Floyd? Mr. Big?" Philo shook his head. "No."

He rounded the corner.

"Tight as a drum."

"What do we do now, lawyer?"

"We can run for it, or—"

"Or what?"

"See if these people have a phone." Philo looked around the porch, spotting a fern in a bucket-sized pot. "Bring that over here."

The Maestro lifted the pot, grunting under its weight. He staggered toward Philo, arms embracing the pot. Philo took it, inspecting the window sash next to the door.

"Stand back."

Philo hurled the pot through the window. The window shattered, sprinkling the porch with glass. Somehow, Philo expected a scream from inside. None answered. He unlocked the window, reaching carefully through the jagged hole and sliding it up.

"Back in a minute."

He stepped through, avoiding an end table and the shattered remains of the pot. Glass crackled underfoot. He paused, listening for occupants.

"No one home."

He unlocked the front door. The Maestro led Floyd inside, glancing apprehensively around at the living room.

"I don't like this, lawyer."

"We don't have much choice."

Philo found the light switch and touched it. The living room, immaculate except for the glass and dirt by the window, appeared. It looked recently occupied.

"It ain't abandoned anyway."

Philo found the phone, a small black object on a table next to the couch. He picked it up, holding the base in one hand and the receiver in the other.

"An antique."

"They ain't got visiphones everywhere, you know."

Philo dialed the operator, watching in fascination as the circular dial spun back.

"This thing couldn't be any slower, could it."

An operator answered. He asked for the police. She switched him directly to them. He explained

about the chase, the shotgun, and tried to describe their location. The policeman finally recognized it as "The Gonzoles' farm."

"OK, stay put," said the officer. "It'll take fifteen minutes for us to get a unit there."

"Fifteen minutes! We could be dead by then!"

"Listen, buddy, this is a small town. We only got so many cops."

"I just want one."

"You'll get him," said the officer, annoyed. "In fifteen minutes." The officer hung up. Philo thanked the dead line. He returned the receiver to its cradle.

The Maestro was already lounging in an easy chair by the door. Floyd, seated on the floor, legs splayed, was watching his ball, making noises over it.

"What's he saying?"

"Don't know."

"Does he ever talk?"

"Sometimes," said the Maestro, scooting further down in his chair and closing his eyes, fingers laced across his stomach. " 'Cept when he don't."

Philo sat down to wait, his thoughts returning to speculations about the Maestro. The Maestro was a fraud. There was no doubt about it. Philo's only question was the extent of the fraud. Somehow the Maestro had acquired enough information about Toole to impress the magnate with his so-called mind-reading ability, a well-constructed illusion. Perhaps the recent events were well-constructed illusions. Damage to Philo's car, a high-speed chase, two armed men—all designed to convince Philo of the Maestro's loyalty. Professional killers, unless they were particularly stupid professional killers, never tipped their hand. They waited for the right moment, then killed. It could all be staging, just as dim lights and booze staged the Maestro's act, making it more believable. At the least, the mind-reading was a fake.

"You don't like me, do you, lawyer?"

Startled, Philo looked up. The Maestro was watching him.

"Not particularly."

"How come?"

Philo debated telling the Maestro. If the entire evening had been staged, Philo could lose little by being frank.

"I think you're trying to take Toole to the cleaners."

"He can afford it."

"Then you admit it."

"Nope. I'm just sayin', it couldn't happen to a nicer guy."

"Perhaps, but he's still my client. I have to watch out for his interests."

"One-sided, ain't you?"

"I'm paid to be one-sided."

The Maestro was silent a few moments, shifting in the chair. Legs extended, he crossed his ankles. "What have I ever done to you, lawyer? *Or* him?"

"Nothing."

"Then how come you're so hostile?" He emphasized the last syllable. "We're both after the same thing."

"Except I earn mine."

"I ain't talkin' about money."

"You mean Williams."

"Yep."

"Because I find it hard to believe you can read minds." Philo paused, deciding to soften the accusation. "Or that anyone can read minds."

The Maestro smiled out of the side of his mouth. "Been a lotta folks believed that."

They sat for several minutes, conversation conspicuously absent. Philo heard a noise outside.

"What's that?"

"What?"

"That sound."

The Maestro listened, alert. "Just Floyd, snortin'."

"Not that. The other noise. Outside." The more Philo listened, the more distinct the sound became. "A car."

The sound, tires bumping on the rutted road outside, stopped abruptly. Two metal doors slammed somewhere in the night.

"Cops?" asked the Maestro.

Philo got up and shut off the lights. "Maybe. Cops or the owners. And maybe not."

He went to the phone and tried to get the Modesto Police again. While he was waiting, the line went dead.

"I don't think it's the police," said Philo, hanging up. "Check the door. I'll get Floyd. We'll have to try a run for the barn."

Philo found Floyd, tripping over him in the dark. He could hear the Maestro at the door.

"See anything?"

"Yep. One of them fellas is out there. We gotta run right past him to get to the car."

Philo shook Floyd, trying to get his attention. Suddenly, as if gears had finally meshed inside Floyd's round head, he looked up, grinning. It reminded Philo of Floyd's expression in the PussyKat Klub, wide-eyed and searching. The grin reminded Philo of a Jack-o'-lantern.

"This is nothing to laugh about, Floyd."

"What's that, lawyer?"

"Nothing." Philo stood up, hoisting Floyd to his feet and tucking the ball under Floyd's arm.

". . . *You go around the left*," said Floyd, "*and I'll go around the right* . . ."

"He talks!"

" 'Course he talks," said the Maestro. "Sometimes."

Philo turned to Floyd, whose face, expectant in the faint light, startled him. "We better stay together, Floyd."

"*OK, Gordie* . . . ," said Floyd in a husky voice.

"Gordie?"

"Ain't no use talkin' to him, lawyer. It ain't real talkin'. I can't see them guys no more."

"*Be careful* . . ." said Floyd in

the husky voice. "*They may have guns . . .*"

"*Not them idiots . . .*" answered Floyd in the first voice.

Philo stared at Floyd, uncomprehending. Suddenly, things clicked.

"Floyd's the mind-re—"

"Yep. But we ain't got time to palaver about it, lawyer."

"Is he parroting those two outside?"

"Probably. Don't sound like you."

Philo tried to visualize the outside of the house, imagining what would be left and right to the two men outside. He decided "left" would be to the rear of the house and "right" between the house and the barn. If they approached at diagonal corners, they would be watching all four sides of the house. That meant— Philo stopped. Staging? The whole thing was probably set up to convince Philo by this grand revelation that Floyd, not the Maestro, read minds. It was very good. For a moment, Philo had been convinced. He decided to play it straight.

"Maestro," whispered Philo.

A clattering answered from the direction of the front door. "Eh?"

"Forget the barn."

The clattering resumed, got nearer, then stopped when the Maestro was next to him.

"You got some other plan?"

"No."

"But—"

"We'll never make it to the barn." Did the illusion require going to the barn? Philo wondered.

"We supposed to stay in here like trapped rabbits?"

"Shh."

"Them guys is armed, you know."

"I know. Shhh."

Philo listened. The house creaked slightly around them, settling on its foundation, contracting from the hot day. Except for Floyd's breathing, there was no other sound. Nothing to tell the men's location.

"Hold onto Floyd," said Philo, putting one of Floyd's hands in the Maestro's and taking the other hand himself.

Towing Floyd and the Maestro, whose shoes slapped against the hardwood floor, Philo crept to the bathroom, situated in the center of the house.

"It's the least exposed room in the place," whispered Philo. He put Floyd in the stall shower, pushing on his unexpectedly broad shoulders to get him seated.

"Stay near Floyd."

Philo lay on the tile floor, supporting himself on his elbows and holding the .38 with both hands. His eyes slowly adjusted to the dark. Most of the living room was within his field of fire. Though he would have no necessity to use the .38, he was supposed to be frightened. Whatever "convincing" demonstration they had planned, his own performance had to be equally convincing. Floyd was talking in

the shower, his voice echoing hollowly in the dark.

". . . *Probably hiding . . .*"

"*Car's in the barn so they're still here . . .*" said Floyd's second voice.

"*Wrong key. Try another . . .*"

"*Check the window first . . .*"

The two had evidently split up.

"*Got it, now quietly, quietly . . .*"

Philo heard a muffled rattling from the rear of the house, then a door squeaked.

"*Damn it! Always squeak when you don't want them to . . .*"

". . . *Can see the whole front room through this window. Wait for Gordie to flush 'em out, then . . .*"

"*Now, close the door, quietly, quietly . . .*"

Philo heard the latch sliding into place on the back door and shifted position slightly to take on the one inside first, aiming through the door at the spot he estimated the man would appear. He wondered whether he would pull the trigger. Men were not beer cans. Could he carry his part of the illusion that far?

"*Not a sound in here. What's that? Someone talking. Must be in the bedroom . . .*"

"*Somebody moving inside. Don't matter which one we get first . . .*"

Something flashed and exploded, ripping into the silence. Another flash and explosion, loud and reverberating in the narrow bathroom. Philo remained motionless.

"*They got guns*!" shouted a voice outside, repeated by Floyd in the shower. In rapid succession, three shots shattered glass and thudded into wood.

"*I'm hit, Gordie*!" yelled the voice outside and Floyd. The man outside emptied an automatic into the house, clicking it several times after the last shot. Philo heard something heavy hit the living room floor.

"*Gordie! Gordie! I'm hit*!" yelled the man outside, then only Floyd's voice repeated the name. "*Gordie. Gord—*"

Both men were dead when Philo at last ventured from the bathroom.

V

"Accidents happen."

"Yep."

Philo slowed the Porsche. They passed an overturned sports car in the center lane. One front wheel still turned lazily. He cracked the side window an inch. Fresh morning air filled the stuffy interior. Lack of sleep was enough without asphyxiation. The Modesto Police, reluctant to believe Philo's account of the shoot-out, had kept him up most of the night. His mouth tasted like tar paper, his tongue fuzzy, eyes granulated.

The Maestro, who had somehow slept through most of the investigation, looked fresh, his alert eyes watching Los Angeles. The city spread out around them on both sides of the freeway.

"You know where we are, lawyer?"

"Vaguely. There's a map in the glove compartment."

The Maestro rummaged in the glove compartment, withdrawing the map and turning it on. The map-face lit up. He pushed the "Co-ord" button, a red plastic square at the corner of the map. The map-face blurred and froze, crossed lines at its center indicating their position.

"Still don't make no sense."

"I'm glad you're not driving."

"Me, too. Can't drive."

Philo glanced at the map. "Forty-five minutes to go."

Philo could hear Floyd, asleep in the back seat, shifting and mumbling. Floyd, at least, had the right idea. When he told his story to the police, Philo had omitted Floyd's role. The police found it difficult enough to believe the dead men shot each other. Complicating the story with a telepath would have kept them in Modesto another six hours.

"What's he doing back there?"

"Dreamin'."

"What does he dream about?"

"I ain't got no idea, lawyer. I ain't in his head, you know. Ol' Floyd's been that way since he was a kid, gruntin' and snortin' in his sleep. Uncle Hector used to say he's dreamin' other people's dreams."

"Is he?"

"Maybe." The Maestro shrugged.

The kid. Philo found it difficult to think of Floyd as anything but a kid. Floyd the kid. Floyd the telepath. Mulling over the events in the farmhouse, Philo had become convinced. Too many details meshed for the performance to have been staged. Even assuming a coordinated effort by the Maestro and the gunmen, the denouement proved Floyd's ability. The only question in Philo's mind concerned its employment. Such as they were, the Maestro's were the only brains of the pair. If the Maestro lied about Floyd, he could lie about other things. He could still be working for someone else.

"I was right, wasn't I?" said Philo.

"About what?"

"You."

"Me?"

"You're a fake."

The Maestro grunted, inspecting a passing car. A truck loomed in the rear-view mirror and honked. Philo pulled into the slow lane.

"It's Floyd who reads minds."

The Maestro was silent. Pouting?

"That's why you always whisper to him in your act, so it looks like he's just passing on what you tell him."

The Maestro's mouth drew into a tight pucker. "So what?"

"So nothing. I'm just a stickler for the truth."

"The truth!" exploded the Maestro. "You high-roll intellecchuls ain't got no more idea what

the truth is than a bullfrog! If it bit you . . ."

"Bullfrogs don't bite."

". . . you'd think it was a skeeter and slap it to death!"

"I don't really consider myself an intellectual."

"You're a lawyer, ain't you?"

"Yes."

The Maestro grunted, his point made. "Anyhow, Ol' Floyd ain't no fake."

"True. But it's not the gun that kills, it's the man using it."

"What's that supposed to mean?"

"Nothing. Just a comment."

"Intellec-chuls," snorted the Maestro.

They passed Torrance and started through Long Beach. In half an hour, they would be at the Orange County airport. Then where? Philo wanted to make a few phone calls before they arrived. Shaw might have turned up something.

He slowed, preparing to exit.

"Where we goin'?"

"Phone booth."

Philo found a gas station and pulled in, parking the Porsche next to a public phone.

"You can stretch your legs. I'll be a few minutes."

"I'll wait here, intellec-chul."

"Suit yourself."

Philo got out and walked to the booth. He stood with his back to the Porsche, blocking the Maestro's view of the screen. He inserted his credit card and punched out Shaw's number. A videotaped operator, her face standardized and impassive, came on the screen, requesting three dollars. Philo punched the three and two zeros. Static flickered on the screen, followed by Shaw's sharp features. Philo always expected Shaw to say "Division HQ."

"Shaw Investigat—oh, hi, Philo."

"Have you dug up anything new on the Toole case?"

"What toolcase?"

"Toole. Milton Toole."

"Oh. Just a minute." Shaw disappeared, leaving Philo with a view of his office. How Shaw found anything in that jumble of stacked papers was beyond Philo. The file cabinets in front of Philo had to be empty, their contents stacked on top. One pile rose from the cabinet to the low ceiling. When Shaw returned, Philo asked what he kept in the cabinets.

"Bourbon."

"Oh."

"I've got one connection, or possible connection."

"What's that?"

"Bertrand Lewis, one of Carpelec's incorporators, lives in Orange County. He's a lawyer. Don't know him, do you?"

"No." Lewis had stuck in Philo's mind. In spite of the fact that a thousand attorneys in California must be named Lewis, it sounded familiar.

"Anything else?"

"He's also chairman of the board of Bioscience."

"What's Bioscience?"

Shaw ruffled some papers, extracting one sheet and holding it up to the camera. "My report. Want a copy?"

"I'm at a pay phone."

"Then I'll read it to you."

"Skip the immortal prose. Tell me about it."

Bioscience, another recently formed corporation, listed among its purposes the development of a Psychosocial Control Implant.

"What's that?"

"Good question."

"Do you have a good answer?"

"No."

"Thanks."

"But I've got a good guess."

"So guess."

"It has something to do with correcting criminal behavior. I went down to their local office. No one knew anything about it. They suggested it's still in development. I checked at the Cal-Berkeley science library. About six months ago, *Science* ran an article on it. At the time it was only a theoretical possibility."

"And?"

"And what?"

"Theoretically, what is it?"

"Let me give you some more background."

"You should have been a scholar."

"I'm taking woodworking in night school. Will that do?"

"I'm glad to see you improving yourself. What's a Psychosocial-whatever?"

"The idea is based on a device called a Programmed Brain Stimulator developed by a Dr. Pinneo at the Stanford Research Institute in the '70's. The PBS was attached to the brain stem and allowed a damaged cortex to be bypassed so that stroke victims could regain some motor skills. Are you with me?"

"Go on."

"This Psychosocial Implant is the opposite side of the coin. It inhibits action. Apparently there's a characteristic alpha wave alteration during certain kinds of criminal behavior, violent crimes and that sort of thing. The idea is to have the alpha wave pattern set off the Implant, thereby inhibiting any criminal behavior. A transmitter in the cortex alerts a technician and he inhibits the criminal."

"Spooky."

"Very."

"Does it work?"

"On rats and monkeys."

"Criminal rats?"

"Other types of behavior are controlled in rats. Mazes for the most part."

"OK, keep on it. And I want a background check on Mento."

Shaw eyed the screen, suspicious. "I thought Big Daddy vetoed that."

"I'll pay for it."

"When do you want it?"

"As soon as possible." Philo hung up. The overtime display at the bottom of the screen read nine dollars. The numbers disappeared. He withdrew his credit card and

punched out Toole's number, collect. After preliminary negotiations with Toole's secretary, reluctant to accept the charges, Toole's face filled the screen.

"Where the hell have you been, Thompson?"

"Modesto."

"I've been trying to get hold of you all—Modesto?"

"It's a long story."

"I'll bet. They're after me, Thompson! You've got to *do* something!"

Momentarily, Philo imagined the Modesto gunmen, resurrected and after Toole. "Who?"

"I don't know, but you've got to do something about it." Toole held up a sheet of paper, dangling it before the camera by one corner like a dead rat. "Look at this!"

"What is it?"

"A ransom note. You want a copy?"

"I'm at a pay phone. What's it say?"

"If I settle the lawsuit with Carpelec, I get Janet back."

"Then, of course, you're not going to settle."

"Don't be funny."

"Is it signed?"

Toole pointed to the bottom of the note. "Just 'a friend'."

Philo smiled.

"This is no joke, Thompson. What are you going to *do*?"

"Me? What are *you* going to do? You could pay them."

"And go bankrupt! You'd love that! The bankruptcy fee alone would set you up for life!"

Philo imagined the headaches Toole's bankruptcy would cause him. "I'd love it. Have you called the police?"

"No. And I don't plan to. I don't want this thing in the papers."

"All right. Give the original of the note to Shaw. He may turn something up. What do you know about a Bertrand Lewis?"

"Who?"

"OK, I'll check with you later." Philo hung up. Facts were piling up. Somewhere in the pile was a key to organizing the entire mass of facts. If he persisted, something would click. Something always clicked. He hoped it would click soon enough.

He checked the phone directory. Bertrand Lewis, Attorney, was listed in Newport Beach. He jotted down the address and left the booth, walking back toward the car.

The Maestro, visible through the windshield, sat sideways on the seat, leaning into the back seat. Philo had the eerie feeling his phone call had been taped. He opened the car door and got in.

"Where to now, lawyer?"

"I've got to see a lawyer."

VI

"Mr. Thompson," said Lewis, standing up behind his desk and extending his small hand. Philo

shook hands. "What can I do for you? Sit down."

Lewis' office smelled of perfume, a faint hovering fragrance left by the receptionist. She had led Philo down a long hall to the office, the clipped sway of her short skirt distracting him. Etchings of robed English barristers held conference on the office walls, their desks as littered with rolled documents as Lewis' was free of them. Philo sat down.

"I'm calling in reference to the Toole case."

"Toole?" said Lewis, still standing, his stature—compact by any standard—further diminished by the size of his desk, a broad expanse of mahogany, meticulously organized. "I don't believe I recognize the—"

"*Carpelec versus Master Toole* is the name of the case."

"Ahhh," said Lewis, sitting down. His form shrank even more behind the immensity of his desk. Small man—large desk; compensation? Philo wondered. Lewis leaned back in his chair, his head surrounded by leather. "*That* explains it. I don't handle Carpelec's general business litigation. That's Mr. Rayburn."

"You're listed with the Secretary of State as an incorporator."

"Yes. Indeed, I am. I did the incorporation work. I do have a small interest in the company, but Mr. Rayburn is their in-house counsel." Lewis picked up a business card from the desk, a conspicuous white rectangle on the bare green blotter, glancing at it. "San Francisco."

"Yes."

"Beautiful city. I occasionally have business there."

"Do you know anything about the transmitters Carpelec is buying from Master Toole?"

Lewis looked over the top of the card at Philo. "Harry—that's Harry Windel, Carpelec's president—did mention something. Is that the subject matter of your suit?"

"Yes. But it's their suit."

"If this is in reference to settlement, I'm afraid Mr. Rayburn's the man to—"

"It's not about settlement." Either Lewis knew nothing or he was playing his cards close to his vest. Philo decided to change tacks. "What do you know about a company called Bioscience?"

Lewis' face brightened, a broad smile spreading across it. His round head, delicately balanced on his thin neck, nodded slightly. "*Now* you *have* come to the right man. Bioscience is my pet project, Mr. Thompson. My brother and I own a controlling interest." Lewis' brow wrinkled, his dark eyebrows reminding Philo of two caterpillars attacking each other. "But what does Bioscience have to do with your lawsuit?"

"Nothing, as far as I can tell. I'm just trying to tie down a few loose ends."

"I'm afraid this will prove more

a dead end. Bioscience is a surgical supply company. My brother is a surgeon."

"They do make Psychosocial Control Implants."

"We *will* make them, Mr. Thompson. Psci's are still in development. If I may be blunt, my brother and I have invested heavily in Psci development. We expect—rather we hope it will make our fortunes, but . . ." Lewis shrugged, momentarily turning up two empty palms. ". . . we have precious little return to date. We must content ourselves with the potential humanitarian aspects for the moment."

"Humanitarian?"

Lewis grinned. "I have piqued your interest."

"Yes."

"Mr. Thompson, when Psci units become a reality, violent crime will almost disappear from the American scene. I consider that humanitarian."

"So would I."

"You are aware, I'm sure, that eighty percent of our nation's violent crime is committed by recidivists. Murder, rape, arson—any of your five basic violent crimes can be effectively deterred by Psci implantation. Once a man is convicted of a violent crime, a brief operation to install the unit will prevent him from ever committing another. With potential benefits like that, my brother and I feel the lack of immediate profit and the expense of development must be discounted. Don't you agree, Mr. Thompson?"

"The Nobel prize should make up the difference."

"You joke, of course."

"One thing bothers me."

"What's that?"

"It sounds unconstitutional."

"Unconstitutional? In what way?"

"Controlling conduct is one thing—all law tries to control conduct . . ."

"Unsuccessfully for the most part."

". . . But your Psci unit inhibits action as soon as a thought forms. It punishes a man for his intent to commit a crime and without due process."

"Mr. Thompson, these are convicted criminals we are speaking of. Once a man shows his violent propensity and is convicted, can we risk loosing him on society? I think not. A Psci implant will allow him to be released without fear of recurrence."

"I thought once a man paid his debt to society, he was free."

"He shall be free within legal limits. After all, he has demonstrated his inability to control himself. Every dog is allowed only one bite, Mr. Thompson, before he is categorized as vicious."

"The Supreme Court might not agree."

"The Supreme Court!" exploded Lewis, "They should be the first to receive implants!"

Philo smiled. "All those criminals on the Supreme Court."

"Have you read *Montez v. California?*"

"No."

"Or *Watson v. Arizona?*"

Philo vaguely remembered *Watson.* "The EEG case."

"*Yes!* The EEG case!" Lewis' face took on a flushed appearance. He leaned forward, bracing himself against his desk with his palms. "Should the criminal go free because the constable erred, Mr. Thompson? Answer me that!"

"It depends—"

"Depends! It is impossible to walk our streets without being murdered or worse! At night, I leave this office and I am frightened, Mr. Thompson! I am frightened to the very core of by being! Will I arrive home? Will my wife and children have a husband and father tomorrow?" Lewis held up five fingers, shaking them at Philo. "Which of the five violent crimes will overtake me between here and my home?"

"Rape?"

"You joke! You joke when this is no joking matter!" Lewis hit his forehead with the palm of his hand. "I have *seen* it, Mr. Thompson! *Oh*, how I have seen it! *Rape! Murder! Pillage! All* of it!"

"Right here in Newport Beach."

Lewis hesitated, palm still touching his forehead. "Newport Beach?"

"Yes."

"Don't be silly."

"But you have seen it."

"*In the papers!* Rampant from coast to coast!" Lewis' voice rose in crescendo. "*Read the papers, Mr. Thompson! Read the papers!*"

Lewis, as if expecting Philo to go out for a paper, stared at him, waiting. Philo, uncomfortable, decided to drop the subject. He had come to talk about Carpelec, not judicial philosophy and the five violent crimes. He wondered what kind of crime they did have in Newport Beach.

"What can you tell me about Carpelec?"

Lewis plucked a Kleenex from the mahogany dispenser on his desk and daubed at the sweat on his forehead, sitting back, his agitation subsiding. When he spoke, his voice was flat and mechanical, the voice of someone being patient in the face of overwhelming irritation. "Very little. As I said, I'm unfamiliar with their current operations. Now if there's nothing else, Mr. Thompson . . ."

Philo stood up and shook hands. "Thank you for your cooperation, Mr. Lewis."

In the elevator, Philo reviewed their conversation. Other than the tirade against the criminals on the Supreme Court, Lewis had revealed little of himself, yet something nagged at Philo's mind. Somewhere in his brain, things were starting to click. Experience told him to stand back and let them click. Thinking

would only get in the way.

The Maestro was asleep in the front seat of the car, curled sideways, fedora covering half his face.

"You two sleep more than any four men I know," said Philo, noticing his own weariness.

The Maestro, without changing position, lifted the fedora, eyeing Philo.

"Yep."

Philo got in. The Maestro sat up, yawning and brushing his sparse hair with both hands. He replaced the fedora, tugging its brim firmly to set the hat in place.

"Where we goin' now?"

"I think we'll wait here a few minutes."

"How come?"

"A hunch."

The Maestro grinned, his teeth unexpectedly white. "You been readin' minds, lawyer?"

"Something like that."

They waited in the Porsche. Philo mulled over his conversation with Lewis, trying to pinpoint what bothered him. The Maestro watched the traffic.

"What you waitin' for, lawyer?"

"I told you. I've got a hunch. Get Floyd ready."

"Ol' Floyd's as ready as he'll ever be."

"Good."

"Good," mimicked the Maestro. "What's he supposed to be ready for?"

"To do his thing."

"What thing?"

"Mind-reading. Telepathy. Whatever you call it."

"If he does it, he does it," said the Maestro, shrugging. "If he don't, he don't. Ain't up to me." The Maestro reached in the back seat, shaking Floyd. "Hey, Floyd! Wake up, boy! The intellec-chul wants you ready! Get ready, boy! This here lawyer's gotta have you ready! You ain't ready he's gonna taddle your hide! Come on, boy, up and at 'em! Read them minds, Floyd!"

"OK, OK, I get the point." Philo glanced in the rear-view mirror. Floyd, wide-eyed, stared back at him, apparently ready. "People seem to be taking a dislike to me today."

"I can see why, lawyer."

Philo decided to deflect the Maestro's antagonism. "When did you discover Floyd's ability?"

"What ability? He ain't got no ability. He's near an idiot."

"He reads minds."

"Oh, that. Ain't no discoverin' about it. The boy's always been that way. God gives ever'body somethin' to make up for what He don't give 'em."

"Some need the compensation more than others."

"Yep. Ol' Floyd's dumb all right, but he's the only one of his kind."

"I believe it."

"Uncle Hector's pretty good at figgerin' out who's shifty and who ain't, but that's more experience than anythin' else. Ol' Floyd ain't

good at nothin' 'cept readin' minds and sleepin'. He's a good ol' boy, though."

"Uncle Hector?"

"Floyd," answered the Maestro, reaching into the back seat and patting Floyd's shorn head. Floyd grinned at Philo in the mirror. "Ain't you, Floyd?"

Floyd continued grinning.

"There he is," said Philo.

Lewis, his short figure minuscule at the foot of the glass and steel office building, walked assertively down the wide entrance steps. He unlocked a car at the foot of the steps, glancing over each shoulder.

"A Rolls," said the Maestro.

"Silver Cloud."

Lewis got in and pulled the Rolls away from the curb. Philo started the Porsche and pulled into the street.

"OK, turn Floyd on."

"Turn him on?"

"Do whatever you do to make him do what he does."

"I don't do nothin'. He ain't no TV set, you know."

"Quit joking around, Mento. You see the man who got in that Rolls?"

"Short guy."

"Yes. Make Floyd read his mind."

"I can't make Floyd read no one's mind, lawyer."

"But—"

"He reads who he wants to."

"In your act—"

"In my act, I just whisper nothin' in his ear and hope."

Philo turned onto Pacific Coast Highway, keeping the Rolls in sight. He tried to blend with the mainstream of traffic.

"Once in Philly," continued the Maestro, "he didn't say a word." The Maestro paused, shaking his head. "We bombed in Philly."

"There's nothing you can do?" asked Philo, avoiding a girl on a bicycle who had drifted too far into the traffic.

"Not much, but I'll try."

The Maestro reached in his pocket and came out with a wrapped hard candy. At the sound of the cellophane, Floyd's grin returned.

"Get closer to that there Rolls."

Philo pulled up on Lewis, reaching over and lightly polarizing the windshield to prevent Lewis recognizing them. The Maestro pointed at the Rolls.

"See that there car, boy?"

Floyd showed no sign of seeing anything.

"See if you can hear him." The Maestro slipped the candy in Floyd's mouth. Philo had the brief impression of Floyd being coin-operated.

"Damn Thompson's going to spoil everything . . ." said Floyd. The voice, a perfect reproduction of Lewis', startled Philo.

"That's it!"

"Sometimes he works. Sometimes he don't."

"Good boy, Floyd," said Philo.

"Can't risk the phone . . . Thompson's probably got it tapped . . . Knew I should have kept my name off those incorporation papers . . . Have to move fast . . ." Floyd fell silent.

Philo looked in the mirror. Floyd licked his lips.

"Give him some more candy."

The Maestro unwrapped another piece of candy. Ahead of them, Lewis' turn-signal came on. Philo changed lanes to follow. The Maestro inserted another candy in Floyd's mouth, pointing at the Rolls.

"The whole timetable has to be accelerated . . . If Thompson can find me, others can find me . . . How he got past those two hit men—Gordie what's-his-name and the other one, I'll never know . . . Can't rely on anyone anymore . . . From now on, if I want something done, I'll do it myself . . . Got to get Williams moving . . . Get them all moving . . . Time is of the. . . ." Floyd stopped talking.

"MORE CANDY!" shouted Philo, excited.

"Ain't got no more candy."

Philo glared at the Maestro. "What do you *mean* you don't *have* any more can—"

"Watch your drivin'."

Philo veered to avoid rear-ending a station wagon. The driver, a woman, snarled something at him. He considered stopping for candy, rejecting the idea only when he momentarily lost Lewis' car in the traffic.

"OK, never mind. Floyd just earned your fee."

They followed Lewis for several miles, lagging inconspicuously behind. Philo's doubts about the Maestro returned. It could be a setup. If the Maestro worked for Lewis, the plan could be to draw Philo into a trap. He would have to be especially careful. The more things appeared satisfactory, the more wary he should be. Life seldom came neatly packaged. When it did, it was suspect.

"Where are we?"

"How am I supposed to know, lawyer? I ain't never been in this part of the country."

"Look at the map."

The Maestro got out the map, pushing the coordination button. Philo glanced at it.

"The airport?"

Ahead of them, the Rolls turned in. Philo parked across the street, watching. The Rolls parked in front of a private air-freight company, Aeroship, housed in a single-story stucco building. Philo started to curse.

"What's eatin' you?"

"I should have known!"

"What?"

"That's why the trail ended at the airport!"

"Why?"

"He's got a plane."

The Maestro peered out the window. Lewis locked the Rolls and

started for a large hangar behind the Aeroship building.

"How are your eyes?" asked Philo.

"Little nearsighted."

"Give me the glasses then."

The Maestro handed Philo the binoculars. Philo extracted a pen and notebook from his inside coat pocket.

"When I call out the plane's number, you write it down."

"OK."

Philo inspected the hangar through the binoculars, watching Lewis. The large doors were closed. Lewis entered through a small door set in the larger one.

They waited, Philo watching the doors and the Maestro ready with the pen. The doors remained closed.

"What's he doing in there?"

"Probably losin' us."

"Losing us?"

"Sure. He goes in one door and out the other. Ain't nothin' to it. Uncle Hector used to do it all the time with the revenuers. Walk in the front, slip out the back, pretty as you please."

"Hm-m-m," said Philo, lowering the glasses. "Let's check it out."

Philo put the binoculars back in the glove compartment, removing his .38. He got out, stooping to talk to the Maestro.

"Coming?"

"Nope."

"No!"

"There's another thing Uncle Hector used to do with the revenuers."

"What's that?"

"He used to go in someplace like that hangar and wait for 'em."

"Yes."

"Then blast 'em."

"Oh. Listen, Mento, you're in this thing until we find Williams or give up. If you don't come, it could be a breach of your contract with Toole."

"If I do come, Ol' Toole ain't gonna have nobody to sue."

"You do want to get paid?"

Grumbling, the Maestro popped the passenger side door.

"And bring Floyd. We may find some candy."

The Maestro got Floyd out of the back seat, tugging on his windbreaker. They started across the street, waiting on the center divider for the traffic to clear.

"When we go in, you and Floyd stay behind me."

"Go in?"

"That's right."

The Maestro looked at Floyd. "Floyd, this here lawyer's nuts."

They crossed the street and headed for the hangar, Philo leading, the .38 in his coat pocket.

The small door to the hangar, unlocked, squeaked. Carefully, Philo opened it, trying to anticipate squeaks by the feel of resistance from the door. He stepped over the high threshold into the hangar.

"Watch your st—"

The Maestro tripped, sprawling headlong on the concrete floor. The door slammed back against the hangar wall, the sound reverberating throughout the hangar.

"What are you *do*ing?" whispered Philo, helping the Maestro up. "Advertising?"

"Sorry."

"Shhh."

Floyd, apparently without noticing the obstacle, stepped over the high threshold.

"Let's go."

The hangar, immense and high-ceilinged, was empty, a gigantic concrete ballroom without dancers. Philo led. The Maestro towed Floyd. They crept around the interior, staying close to the corrugated iron walls.

"I don't see nothin', lawyer."

"Shhh."

A light, illuminating the windows of a glass office across the hangar, went out.

"Come on."

"Ohhh, no!"

"Shh. Come on."

"I get killed, you send my money to Hector Wallace in Nacogdoches, Texas."

"What if I get killed?" whispered Philo.

"Then don't worry about it."

They edged toward the darkened office, bending low. Philo peered through a window, pulling back quickly. He took the .38 out of his pocket.

"It's empty."

"Your peashooter?" said the Maestro.

"No. The office."

"This here place gives me the creeps, lawyer."

Philo ducked and scuttled toward the door, trying to keep below the windows. The Maestro and Floyd followed. He prodded open the door with the muzzle of the .38, tensed to jump aside. The door opened. They waddled in.

"I don't see nothin'," whispered the Maestro, behind him.

"Shhh. Did you hear that?" Philo listened intently.

"I don't hear noth—"

"Shhh."

"You must be hearin' things, lawyer."

"That. Did you hear it?"

"Just me, Thompson," said Lewis' voice, loud and echoing in the quiet hangar. The lights came on. Hunkering, Philo looked back at the door. Lewis, a .45 leveled at Philo, stood in the doorway, flanked by two men twice his size.

"Oh."

VII

"Mr. Thompson?"

"In the flesh."

Janet Toole looked at Philo, blinking. Her normally tan complexion had sallowed during the weeks of captivity. Her beige skirt and white blouse were soiled. She had run out of makeup. Self-consciously she touched her brown hair. "Oh, dear."

"Looks like we found one of 'em, anyway, lawyer."

Philo introduced the Maestro and Floyd and glanced around at the light green concrete walls. A chill hung in the room.

"Have they kept you here the whole time, Janet?"

"The beasts!" exclaimed Janet. "They would have if they'd thought of it!"

"Where's Williams?"

"Poor Edward. They've made the poor baby work every day since *he* brought us to this *aw*ful place." Her lips tightened in indignation, almost disappearing. The expression, combined with the lack of makeup, gave her face a pinched look. "Even Sundays!"

"Doing what?"

"Making that *aw*ful transmitter. Oh, Mr. Thompson—"

"Philo."

"Philo, I wish Daddy had never started to make that awful thing. Then he wouldn't have hired poor Edward and those beasts wouldn't have lured him down to this *aw*ful place and we wouldn't be here and—oh, it's just *aw*ful!" She began to blubber. Tears of frustration and rage trickled down her cheeks. She wiped them away with the back of her hand and sniffed once. When she looked up at Philo, her eyes were red and puffed. "I just *hate* it here! What are you doing in this horrible place anyway?"

Philo remembered Lewis disarming him and blindfolding the three of them. They were led across the echoing hangar, down a humming elevator and through a corridor. When the larger of Lewis' two henchmen, a man whose squared-off sideburns stopped at the line of his square jaw, removed the blindfolds, they were in front of the room. Lewis had already left them.

"Rescuing you."

"I'm glad someone cares enough to try," said Janet. "I was afraid—" She broke off.

"What?"

"I was afraid Daddy didn't care." She started sniveling again. Philo put his arm around her shoulders.

"He cares."

"All he cares about is his *aw*ful money and that old transmitter."

"He cares about you."

"No he doesn't. He'd leave me here just so he wouldn't have to pay my allowance."

"Janet."

"What?" She looked up at Philo, her nose running.

"He sent us to find you."

"You're just saying that to make me feel better."

"No."

"You *are*."

Philo was silent.

"All he cares about is Edward and that stupid thing."

"But you *are* his favorite daughter."

"I'm his *only* daughter."

Philo shrugged. "I tried."

She looked at the floor again,

wiping her nose on her sleeve. "It's so *horrible* here."

"Do you have any idea why Lewis wants a matter transmitter?"

"*That* awful little man! I don't know and I don't care! He's so *awful* he's *horr*ible! That evil little squirrel face of his and those ugly little snake eyes and those pointy teeth—"

"Pointy teeth?"

"Like a weasel or something else horrible! A rat. Yes, a rat with diseased rabid yellow little teeth. And that brother of his is exactly like him! You wouldn't think there could be two of those evil creatures! Exactly alike!" She paused, pulling away from Philo's comforting arm. "Except for the mustache, of course."

"What mustache?"

"That ugly little man's ugly little brother has a mustache."

"An ugly little mustache?"

Janet smiled. "Yes. *Verrry* ugly! They keep poor Edward working night and day. He's lost twenty pounds, the poor dear, and for what? I'll tell you for what. For that silly machine! Who wants to go to Maryland that fast anyway?"

"Maryland?"

"Yes. Ugly little state."

"I rather liked—"

"It's ugly! Like everything those ugly little men touch!"

"The transmitter's focused in Maryland."

"Yes."

"Where in Maryland?"

"I don't know. They just gave poor Edward the coordinates and said to focus the stupid thing there. Poor Edward is so skinny! I always thought you were skinny, but poor Edward makes you look like a blimp."

"Thanks."

She puckered her lips and clenched her fists, staring past Philo at the closed door. "Oooo! It makes me *so* angry!"

The door rattled and came open. Three men, including the square-jawed henchman, entered the room, stationing themselves just inside. A fourth man in a mint green surgical gown strode in behind them, smiling, rubbing his hands together. Except for an obsessively trimmed mustache—a faint quarter-inch line on his upper lip—he was a carbon copy of Lewis.

"Well, well, well," said the surgeon, his eyes darting from Philo to the Maestro to Floyd. His teeth, except for two prominent incisors, looked perfectly normal. "What *have* we here?" His eyes stopped momentarily at Floyd, who was watching the wall, then returned to Philo. "I hope you gentlemen haven't eaten too much today. I know Miss Toole hasn't."

"You *beast*!"

"Restrain yourself, Miss Toole." He looked at Philo, expecting an answer.

"As a matter of fact, no, we—"

"Good. Good. It's bad to eat before surgery. That is why Spanish

bullfighters never enter the ring on a full stomach. Their own moment of truth may come in the operating theater rather than the arena. Do you like bullfighting, Mr. Thompson?"

"What surgery?"

"No. I don't suppose you would. My brother Bertrand despises it. They say attorneys are doctors who can't stand the sight of blood. Do you believe that's true, Mr. Thompson?"

"Only their own. You mentioned surg–"

"Bertrand looks down on me because I work with my hands. He calls me a body mechanic. I don't find that amusing. I hope you don't share his view."

"Certainly not, but–"

"I work with my hands, true, but is that any reason to demean my talents?"

"Of course not, but–"

"Perhaps I haven't the verbal facility of Bertrand, but what *are* words after all?"

"I haven't the slightest idea, but–"

"Noises. Nothing more. When *I* finish a piece of work, something has altered in the physical world. When Bertrand and the rest of you wordsmiths finish, nothing has changed. Only the noise pollution level has increased, if you see what I mean."

"Perfectly, but–"

"*These* hands," continued Dr. Lewis, holding them up, then broke off and examined both sides of his hands, smiling at them.

"You mentioned surgery."

"Hm-m-m?" Dr. Lewis continued looking at his hands.

"Surgery?"

"Yes. My specialty, you know," he said to his hands.

"What sort of surgery did you have in mind?"

Dr. Lewis reluctantly looked up at Philo, lowering his hands. He seemed to remember where he was and tut-tutted, shaking a perfectly manicured finger at Philo. "All in good time. Now!" He clapped his hands together. "Who's first?"

Dr. Lewis looked around the group, his eyes finally stopping on the Maestro.

"What you lookin' at me for?"

Dr. Lewis smiled, his eyes twinkling.

"Oh, no!"

"*Oh*, yes."

"I ain't gettin' no operation!"

"But you are."

"I ain't and that's *that*!"

"No, sir. That, in this case, is not that."

"It is!"

"It isn't."

"I don't need no operation! I'm as healthy as the day I was born!" The Maestro thumped his narrow chest once with his fist, coughed and continued. "You cut me and I'm gonna have ol' Floyd yank out your liver with mental tell-epathy!"

"Who, may I ask, is old Floyd?"

"That's him over there lookin' at

the wall and he's one dangerous critter, so if you want to keep your liver, you keep your paws off me, shorty!"

Dr. Lewis' gaze lingered on the Maestro. "Shorty, indeed." He turned to Philo. "You don't know about the operation?"

"No."

"Completely painless, I assure you. Bertrand didn't tell you?"

"No."

"Then I shall."

"Please do."

"First," said Dr. Lewis, holding up his index finger. "We shave the head . . ."

"Ain't shaving me."

"Second . . ." Dr. Lewis held up two fingers, making a slicing motion in mid-air with them. ". . . we cut the scalp. Then, using a little saw, we saw off the cranium."

"Oh, no!" said the Maestro, backing toward the wall and holding the brim of his fedora with both hands. "You ain't cuttin' off my head!"

"Only part of it."

"Only *none* of it! You ain't cuttin', you hear me?"

"I hear you. In your case we might do a transplant rather than an implant." Dr. Lewis returned his attention to Philo. "We remove this severed part of the skull. It might interest you to know that it looks very much like the grainy inside of a halved coconut shell."

"Very interesting."

"Then, with a little deft cutting of the old gray matter . . ." Dr. Lewis tapped the top of his head. ". . . we insert and connect a Psci unit—Alpha detector, transmitter, inhibitor—the whole apparatus. It's an absolutely wonderful operation!"

"I'll bet. Then you try to put Humpty-Dumpty together again."

"Try? No, we *do* put Humpty together. I like your wit, Mr. Thompson. No one has quite expressed it that way before."

"Probably because they couldn't get a word in edgewise."

"It's too bad that wit is one of the first qualities noticeably missing after the operation."

"May I ask a question?"

"Certainly."

"I thought it only worked on criminals."

"We are *far* beyond that, Mr. Thompson. Now, who is going to be first?"

No one volunteered. Philo won by default. One of the henchmen stepped forward and withdrew clippers, a safety razor and a can of shaving cream from his jacket pocket. He moved a collapsible metal chair into the center of the room and gestured for Philo to sit down.

The barber nicked Philo only once.

"Ow!"

"Sorry."

Shorn, Philo inspected himself in a hand mirror. "Take off the sideburns, wise guy."

The barber grinned. "I like 'em."

"*Take them off.*"

Dr. Lewis nodded. The barber removed Philo's sideburns. Philo watched as first the Maestro and then Janet were clipped and shaved, their hair piling at the foot of the chair. Floyd only needed his five o'clock shadow removed.

"There," said Dr. Lewis when the barber finished with Floyd. "Did that hurt anyone?"

"It ain't the haircut I'm worried about."

Dr. Lewis laughed. "There will be a short delay before I am able to proceed with any of you. We have a more important patient to attend to." Dr. Lewis waved the guards out the door. He glanced back from the doorway, grinning. "I hope it isn't too drafty for you."

The door closed.

Janet Toole stamped one foot. "He's so *meeean*!"

Philo ran his hand over his bare head, momentarily envious of the Maestro's warm fedora. The Maestro noticed Philo's glance.

"Well, intellec-chul, what now?"

Philo turned his palms toward the ceiling, genuinely regretful. "Sorry."

"Sorry won't get it."

"I know."

Janet Toole, looking from Philo to the Maestro, then touching her own head, burst out crying. Philo continued looking at the Maestro. Other than the haircut, causing the

fedora to settle close to his ears, something about him was different. It took several seconds to identify. The change was in Philo. He trusted the Maestro.

"Somethin' funny about me?"

"No. I was just thinking."

"Thinkin' what?"

"I was wrong about you." Philo, self-conscious, tried to put apology into his smile.

"Little late, ain't it?"

"Probably."

"Forget it. We gotta find some way outta here."

Philo noticed Floyd behind the Maestro, staring at the wall. "What's he looking at?"

"Air-conditionin', most likely. It's a little cold in here."

"The air-con—" Two feet above Floyd's head, a square grille, covered with wire mesh, was set in the wall. A faint sighing issued from it. "The air-conditioning! Floyd, you're a genius!"

"I don't know as I'd go that far, lawyer."

Philo picked up the collapsible chair in the center of the room, carrying it to the wall next to Floyd.

"Excuse me, Floyd."

Floyd continued to stare at the grille without moving. Philo placed the chair against the wall and stepped up. Four screws held the air-conditioning grille. He reached into his pants pocket, feeling for change.

"Do you have a dime?"

"That ain't no soda machine, you know."

"Do you have a dime?"

The Maestro handed Philo a dime. Two of the screws came out easily. One required all the torque Philo could put on the dime, numbing his fingers. The last one stuck.

"Damn thing."

"Lemme try."

Philo got down. The Maestro stood on the chair and worked at the screw. The dime slipped several times, then caught.

"It moved!" said Philo.

"I didn't feel nothin'."

"Try it again."

Almost imperceptibly, the dime moved, then gave.

"Got it." The Maestro extracted the screw and removed the grille. "Like the man said, 'Who's first?' "

"It was Floyd's idea," said Philo.

The Maestro got down and helped Floyd onto the chair. Janet, sniffing, steadied it. Philo and the Maestro coaxed Floyd into the duct, lifting his feet one at a time onto the back of the chair and placing his knees in the hole. He seemed to want to enter the duct. Floyd's shoulders, unexpectedly broad, barely cleared the edges of the hole. He wriggled into the duct, leaving only the soles of his splayed shoes visible from the ground. He stopped.

The Maestro, standing on the chair, pushed on Floyd's shoes with

the palms of his hands. "Go on, boy."

The shoes remained motionless.

"What's he doing?" asked Philo, craning up at the hole.

"I think, ahh—"

"What?"

"I think he's sleepin'."

"*Sleeping*! Well, wake him up, then!"

"I'm tryin'." The Maestro pulled on one of Floyd's legs. "Ain't no use. Ol' Floyd gets horizontal, he sleeps. I shoulda knowed."

"How long is he going to stay that way?"

"No tellin'." The Maestro peered back into the duct.

"Pinch him or something."

"Won't work. You can wake the dead 'fore you can wake ol' Floyd."

"We're all going to be as good as dead if you don't wake him up."

"OK, I got a idea."

"I hope it's a good one."

"It's just a idea."

Squinting into the duct, the Maestro put both palms to his temples, pressing them together.

"What are you doing?"

"Concentratin'."

The Maestro's brow furrowed, tilting his fedora. Shuffling sounds issued from the air-conditioning. The shoes disappeared.

"That's got him," said the Maestro.

"What's he doing?"

"Turnin' around."

Philo imagined Floyd contorted in the small duct, plugging it permanently. "How?"

"It gets wider further on."

"What were you concentrating on?"

"Candy."

Philo smiled. The Maestro was brighter than he seemed. "Let me try."

Laboriously, the Maestro dismounted the chair. Philo stood on it, peering after Floyd. The room duct joined a main duct eight feet into the hole. Floyd was in the main duct. Philo tried to visualize candy, remembering a butterscotch ball he had once enjoyed. The sounds increased, then faded.

"What's he doin', lawyer?"

"He's going the other way."

"You thinkin' about candy?"

"Yes."

"Where is it?"

"Where's what?"

"The candy."

"I don't know. Just in my head."

"Think about it in this here room."

Philo visualized the butterscotch ball in the room, trying to resurrect its taste from memory. The noises increased and Floyd's head poked into the room duct, advancing. When Floyd emerged from the duct, grinning, Philo and the Maestro caught him, preventing his headlong fall to the floor.

"I'd better go first," said Philo. "I'll see what I can find and come back for you. Keep an ear to the hole so I can yell if I have to."

Philo entered the duct. He pulled himself along the galvanized iron tube, the buttons on his vest ticking on the metal seams. He reached the main duct, a larger square tunnel, looking both ways. At intervals along the tube, dim light entered from the rooms it serviced.

He pulled himself into the main duct and squatted, trying to choose a direction.

"Six of one, half a dozen of the other."

He started through the main duct on all fours, creeping as carefully as possible. Metal twanged under his weight. His coat snagged and ripped.

"Damn it! My best suit."

At the next intersection, he glanced into the side tunnel. He crawled in, moving cautiously when he approached the grille.

The room outside, clearly visible through the wire mesh, matched in size the room he had left. Below him, at a table in front of a computer display, a man sat with his back to Philo, hunched over sheets of paper and scribbling. The man's sport coat, a bright plaid, matched the description of Williams'. Except for a flickering TV monitor, the computer display was lifeless. Philo could make out the inside of the airplane hangar on the monitor. He looked around the room. He could see no guards. He eased up to the grille, cupping his hands around his mouth.

"Williams," whispered Philo.

The man, lost in thought, continued writing.

"Williams," repeated Philo, more insistent.

Williams stirred, stretching and yawning, then returned to his writing.

"This guy's worse than Floyd. *WILLIAMS!"*

Williams flinched, looking around.

"OVER HERE!"

Williams looked around, then stood up. He peered into each corner of the room, then checked under the table. Finally, he shrugged and sat down.

"IN THE AIR CONDITIONING!"

Williams' head jerked toward the air-conditioning. Still unsure of the voice's origin, Williams got up and approached the wall, craning up at the air-conditioning grille. His clothes hung baggily from his lanky frame.

"Hello?"

"My name's Philo Thompson. I'm Milton Toole's lawyer."

Williams thought about the introduction, scratching his head and looking at the floor. He looked at the grille again. "What are you doing in the air-conditioning?"

"Building inspector. Listen, we haven't got much time. I take it that console has something to do with the matter transmitter."

Williams glanced over his shoulder at the console as if to determine which console Philo meant.

"Yes. The subnuclear reintegration equipment's downstairs and the focusing ring is in the hangar. That console there controls—"

"Skip the tour. Do you have any idea *what* Lewis is planning to do with it?"

"Sure."

"What?"

"Stage a *coup d'état,* but—"

"A *coup d'état!*"

"Philosophically speaking."

"What are you talking about?"

"I wish I knew."

"You don't?"

"No."

"That's a start."

"Lewis thinks he does, though. Try this on for size."

Williams began talking. The more Philo listened, the less he understood. According to Williams, who had placed the information together from various conversations with Lewis, a conspiracy against Justice was loose in the land. Murderers, rapists, probably even necromancers were being freed daily by the courts, following guidelines established by the US Supreme Court.

"Not them again."

"Pardon me?"

"Nothing. Go on."

Respect for law and order, according to Lewis, had sunk to a new low. The streets were unsafe. Drastic action could prevent chaos but anything less invited it.

"He keeps saying, 'We have the answer, Mr. Williams! Right here in our hands!' Then he holds out his hands and his eyes narrow and he usually slams something down. He broke my best slide rule once. Whatever it is that is supposed to be right in his hands he seems to think the present Supreme Court will outlaw. I haven't the vaguest idea what he's talking about."

"I do." Philo rubbed his head.

"He keeps shouting, 'Five to four!' like a baseball score. Then he looks at me, not really seeing me, and says, 'Soon, Mr. Williams, it will be five to four in favor of Justice!' He says Justice as if it were the man on third. I don't have any idea what he means."

"The current Supreme Court is split five to four on most criminal questions. What does Maryland have to do with anything? The Supreme Court's in Washington."

"I don't know. By the way, they just brought someone through the transmitter."

"Who?"

"You got me. He was stretched out on one of those hospital carts."

"A gurney."

"Right."

"I think I know who it is," said Philo.

"Who?"

"I'll give you one out of nine guesses."

VIII

Philo lay in the air-conditioning duct, his chin resting on the back

of his hands. Somewhere behind him, the main conditioning unit came on. Cold air drifted past his cheek. He had underestimated Lewis. The true scope of Lewis' imagination was staggering. Lewis' Psci unit was probably unconstitutional. Instead of modifying the device to meet the Supreme Court's objections, Lewis was going to modify the Supreme Court to allow the device. Change one vote and the Court's philosophy changed with it.

"Mr. Thompson."

"What?"

"Do you have some plan?"

"Plan?"

"To get us out of here."

"Oh. I'll get to that in a minute. I'm thinking."

With Williams to build a matter transmitter—the perfect kidnap vehicle—and Master Toolé bankrupt, or at least tied up with lawsuits to conceal the means of the kidnap, Lewis had a clear field. After the operation, Lewis could allow the transmitter to be marketed without fear anyone would connect it to the Court's change of position, that is if Toole could find someone to replace Williams, who would remain missing permanently. Audacious was too limited a word for it.

"Mr. Thompson."

"What?" answered Philo, annoyed.

"I'm getting a crick in my neck standing here."

"Sorry. Wait here."

Philo backtracked to the main duct. He hunkered and waddled to the next room, crawling into its ventilating tube. He pulled himself toward the grille. Cautiously, he looked out.

Below him, supine on a hospital cart, lay an evidently unconscious man, prepared for Dr. Lewis' operation. The face looked vaguely familiar. Philo tried to imagine the head with hair.

"Mr. Justice Weber."

Contorting in the narrow duct, Philo turned around, feet toward the grille. He began kicking at the wire mesh. The noise, a deafening clatter, chilled him. He paused and listened. No one had entered the room. He continued kicking and listening for several minutes, bracing himself against the sides of the duct. Finally the grille gave, the wire mesh parting.

"Shoddy building materials."

Once split, the mesh rolled easily against the edges of the frame, leaving a hole only slightly smaller than if the grille had been removed from inside the room. Philo rolled on his stomach. Sweat dripped from his forehead onto the galvanized metal floor of the duct. He backed out the hole. His suit snagged several times. He searched below him with a dangling foot, found something solid, tested it for his weight and pushed himself from the duct. He looked down at the supine figure at his feet.

"Sorry, Your Honor."

Justice Weber remained unconscious. Philo got down and went to the double doors, pushing one slightly ajar. The corridor was empty but Lewis' voice, loud and exuberant, echoed toward him.

"I'll get him myself. It will be an honor." Lewis laughed once sharply.

Philo backed away from the door, glancing quickly around the room. A pile of leftover construction material leaned against one wall. He selected a sturdy two-by-four and raised it over his head, gripping it with both hands like an ax.

The doors swung open. Lewis, talking happily to himself, entered.

"Now, my little philosopher, we shall see how your philosophies hold up under the knife—Thompson!"

Philo brought down the two-by-four. It connected, sending a jolt up his arms. Stunned, Lewis stared at him. Philo hit him again. Lewis collapsed.

Philo dropped the two-by-four. Straddling Lewis, he stooped, checking first to be sure he was out cold, then riffling his pants pockets. He came up with a set of keys and started for the door. A sound from the corridor stopped him. He eased open one door and stared through the crack. One of Lewis' men had stationed himself just down the corridor.

Philo carefully closed the door. He inspected the room for resources. He searched Lewis again but found nothing new. Lewis had left his .45 behind.

A metal storage cabinet stood against one wall. Philo rummaged through it, coming up with a green surgical smock, cap and white mask. He found the clippers and razor Lewis' men had used on him. He examined the clippers, looked at Lewis and smiled, a plan forming in his mind.

"Clippity-clip."

Working quickly, Philo removed Justice Weber from the cart, storing him next to the cabinet and covering him with several smocks. He stripped Lewis and loaded him on the cart. He tested the clippers, wincing at their unexpectedly loud buzz, and began shearing Lewis. Shaving the skull took the most time. He nicked Lewis twice.

"Sorry."

Rolled on his stomach, Lewis was indistinguishable from Justice Weber.

"Welcome to the Supreme Court."

Securing the cart strap around Lewis, Philo noticed a decal on the frame: *Property of the US Government, Bethesda Naval Hospital, Bethesda, Md.* Another piece clicked into place. Philo remembered a newspaper item about Justice Weber's hospitalization after a minor automobile accident. Supreme Court justices, like other government officials in Washington, used the Bethesda Naval Hospital.

All Lewis had to do was focus the matter transmitter and wait. Eventually one of the old men on the Court would be hospitalized for something that could conceal Psci implant surgery.

Philo dressed in the surgical gown and covered his head with a green cap. He slipped on a pair of rubber gloves and the white mask, tying it firmly behind his head. He started toward the door, pushing Lewis' cart. Taking a deep breath, he prodded open the double doors.

"Make way! Make way!"

The guard watched the cart emerge from between the doors.

"Where's Mr. Lewis?"

"He went out."

"I didn't see him."

Philo glared at the guard over the edge of his mask. "Stay awake from now on! What do you think you're paid for?"

Chastised, the guard pulled back against the wall, sucking in his belly to let the cart pass.

"Where you taking him?"

"Hm-m-m?"

"Where you going?"

"What's it to you?"

"Nothing, but the operating room's that way." The guard jerked his thumb down the corridor.

"Oh."

Philo changed ends on the cart, pushing it back past the guard. At the end of the corridor, a second set of double doors showed light through their porthole-shaped windows. Philo nosed the cart through.

"It's about time," said a masked Dr. Lewis, standing near the operating table. "Where's my brother?"

"He'll be here for the operation."

"OK, roll it over here and let's get it on the table. I see you already have it on its stomach."

Philo rolled the gurney next to the operating table. The operating room, brightly lit compared to the corridors, smelled of antiseptic. The lights, combined with the surgical gown over his suit, made him sweat. It beaded on his forehead and ran down his temples. Dr. Lewis and three assistants helped Philo transfer the body, still face down, to the operating table.

"I see the anesthesia's holding," said Dr. Lewis.

"We had to give him a second dose," responded Philo.

One of the assistants taped electrodes to the body and adjusted a beeping oscilloscope, its horizontal median line hopping with each beat of the patient's heart. Remembering the two-by-four's jolt up his forearms, Philo was glad to see the heart worked.

A second assistant clamped the head in place with a complicated arrangement of pads. It reminded Philo of the back of a dentist's chair. Dr. Lewis examined the head, pointing to a mushroom-colored bump on top.

"What happened here?"

"It must be a reaction to the anesthesia."

"Hm-m-m. Odd. I've never seen

anything similar to it. It might make an interesting medical journal article. All right. Let's get cracking. We haven't got all day."

The clamping assistant cleansed the scalp. Dr. Lewis examined the skull with his fingertips, testing it like a ripe cantaloupe. Satisfied it was ripe, he extended one hand, palm up.

"Scalpel!"

A scalpel slapped into his open hand. Philo backed out of the operating room. Once outside, he wiped the sweat from his brow with his forearm.

He walked past the guard, nodding once, and turned at the first intersection. Judging by the distance he had crawled in the air-conditioning, he found the Maestro and Janet's room. He tried several keys in the lock. After half a dozen, one turned.

The Maestro was backed against the opposite wall, Janet and Floyd next to him, a chair raised above his head.

"You stay back, you hear?" said the Maestro, shaking the chair to emphasize his order. "You ain't cuttin' *my* head off!"

Philo started to advance. The Maestro raised the chair higher. Philo remembered the surgical mask. He pulled it down.

"Lawyer!" said the Maestro, continuing to hold the chair aloft. "Where'd you get them duds?"

"On sale. Let's get out of here." Philo began stripping off the surgical gown.

The Maestro lowered the chair. "Where we goin'?"

"Out, I told you."

"You got a map, lawyer?"

"Janet knows the—"

Janet shook her head from side to side. "They blindfolded me. This place is a maze. It used to be an old Nike base."

"A what?"

"Those missiles they used to have."

"Let's get Williams. We can worry about getting out after that."

Philo led them down the corridor away from the operating room. He checked each corner carefully before turning it, squatting and glancing around. When it seemed they had gone far enough, he began testing rooms. The first two were empty. The third held Williams.

"Janet!" said Williams, when Philo led them into the room. "What have they done to you?"

"The beasts cut my hair and if it hadn't been for Philo, they would have cut more than that."

Williams looked at Philo, then over his shoulder at the air-conditioning grille. "You get around."

"I like to get to know a place inside-out."

"OK, lawyer," said the Maestro, standing just inside the door and holding Floyd's hand. "We got Williams. What now?"

Philo looked around the room as if searching for a suggestion. The

transmitter console was still dead. Only the monitor screen showed the console even had power. Philo approached the screen. The ground-level hangar was empty. He had a clear view of the hangar doors.

"Where's the focusing ring for the transmitter?"

"It's out of view. Half of it is buried under the hangar floor and the other half arches up toward the ceiling. But I don't see—"

"What are we looking at now?"

"The transfer surface, that is, when the power's on. It sort of shimmers like hot air. The effect is rather interesting. Once we got moisture at the transfer surface. The hot air from here and the cold air in Maryland made a sort of miniature weather front. It makes me think the juxtaposed surface is inside a building somewhere."

"Why?"

"The temperature readings on the other end are always seventy-two degrees."

"Bethesda Naval Hospital," said Philo. "How much of the hangar does the focusing area cover?"

"Most of it. But only the center twelve feet are permeable. The rest of it is just blocked like a glass wall. It had to do with the phase of—"

"OK," said Philo, waving Williams into silence. "Don't confuse me."

Philo began pacing the room. Janet, the Maestro and Williams watched him, their faces expectant. Floyd watched the door. Why he was supposed to think of everything was beyond Philo. The more he thought, the less he saw any way out. If they knew the exact route to the hangar above them, they might have a chance. Wandering around in this underground maze, they stood no chance at all. Philo paced in front of them, eyeing each as he passed. Janet, a faint line separating her frowning forehead from where her hair had been, looked the most distracted. When he looked at her, she lowered her eyes. Williams and the Maestro simply watched him, waiting. Philo paced. Floyd, staring at the door, ignored him. Philo stopped behind Floyd. Floyd continued staring at the door.

"I've got an idea."

"I hope it's a good one, lawyer."

"It's just an idea."

Philo visualized the butterscotch ball, remembering the crackling sound of the cellophane, unwrapping it in his mind. He summoned the sticky butterscotch taste. Floyd turned around and looked at him, eyes wide, grinning. Philo kept the butterscotch image, but visualized it inside his Porsche.

Floyd turned toward the door, reaching for the knob with a slow, abstracted motion like a man with something on his mind. Philo turned to Williams.

"Can you turn on the matter transmitter from here?"

"Sure, but that won't do us—"

"Can you set it so it comes on in fifteen minutes?"

"I suppose so. There is a time delay circuit, but—"

Philo looked at the Maestro. "How long did it take Lewis to lead us down here?"

"Ten, fifteen minutes."

"OK, set the transmitter to come on in twenty minutes." Philo glanced at his watch. "It's four-thirty now. That means we have to be out of here by ten minutes to five."

"I don't see what good—"

"Just do it, please. Unless you've got a plan of your own."

"No," admitted Williams.

Williams touched several plates on the computer console. It lit up, the display giving readouts in several colors. The numbers were meaningless to Philo. Williams looked up.

"It's set. But what do you have in mind?"

"Butterscotch."

Philo concentrated on butterscotch, locating it inside the Porsche. Floyd opened the door and started down the corridor. From behind, his stout gait looked determined.

"Philo," said Janet at Philo's left elbow. "Where *are* we going?"

"You got me," answered Philo. He nodded toward Floyd ahead of them. "I think he knows, though."

"Floyd?"

"Intellec-chuls," snorted the Maestro.

Floyd turned at the corner, leading them back past their original room. Before each intersection, Philo let the butterscotch image fade and walked past Floyd to check around the corner. Tiring of butterscotch, he switched to peppermint, imagining a red and white striped lozenge on the seat of his car. Floyd's pace picked up. They trotted through the concrete halls, shoes slapping. Philo glanced at his watch. Ten minutes.

"I hope that young man knows where he's going," said Williams.

"Floyd's thirty-five," answered Philo, avoiding both the statement and a chuckhole in the floor.

Floyd zigged and zagged through the corridors. They followed. Once the Maestro stumbled, cursed, got to his feet and continued. By the time they caught up with Floyd, he was standing in front of a large sliding door, the tip of his round nose touching it.

"What's in there, lawyer?"

"Probably the elevator."

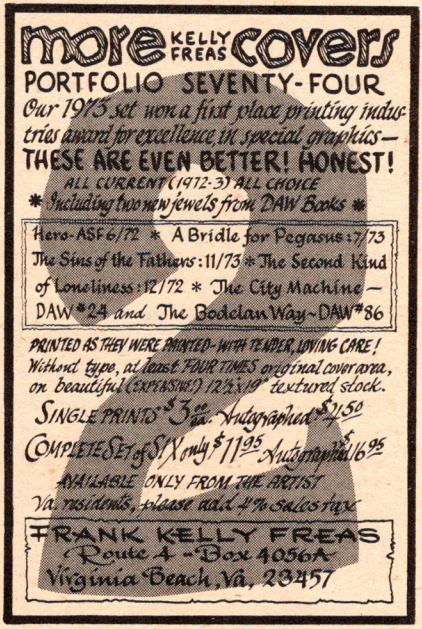
"I don't see no button."

Philo inspected the doorjamb. A recessed keyhole, barely noticeable, showed in one post. Philo got out Lewis' keys, glancing at his watch.

"Three minutes."

He found the key and inserted it, twisting. A lurching sound responded behind the door, followed by a steady hum.

"Come on."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Philo heard footsteps from down the hall. A half dozen of Lewis' men spilled into the corridor at an intersection, gesturing and pointing wildly.

"There they are!" shouted their leader, the square-jawed guard who had blindfolded Philo. *"Get 'em!"*

The door slid open. They stumbled into the elevator. Four index fingers simultaneously jabbed at the button. The door closed, cutting off the square-jawed guard's sentence. *"Take the stairs and—"*

The elevator hummed softly around them. Philo could feel the tension in the air. He felt trapped. It was impossible to tell how fast the elevator was rising. He expected the door to open on a semicircle of men with guns. Thoughts of peppermint and butterscotch, no longer necessary, kept intruding, eliciting broad smiles from Floyd. Philo looked at his watch.

"One minute. As soon as the door opens, run like hell."

The door opened. They clattered out onto the hangar floor. An expanse of bare concrete confronted them. Overhead, a metal bar arched toward the ceiling and returned to the floor, completing a "U."

"Run!" shouted Philo.

Williams and Janet sprinted for the small hangar door. The Maestro, towing a now reluctant Floyd, followed. Philo trailed. Williams reached the door and threw it open. A rectangle of afternoon sunlight fell on the hangar floor. Philo heard something behind him. He glanced over his shoulder. Lewis' men burst from a stairwell into the hangar, fanning out from the doorway. Something flashed in square-jaw's hand. The metal hangar wall next to Philo's head ripped, showing daylight.

"Hold it, Thompson!"

Philo pushed the Maestro and Floyd through the door as the second shot rang out in the hangar. Philo put up his hands and turned around. Perhaps he could delay them long enough. They advanced slowly across the hangar floor, unsure whether Philo was armed.

A wrenching crack shook the air, vibrating the corrugated iron walls

around them. A twelve-foot shimmering circle had appeared in the air between Philo and the men, its lower edge touching the floor. Philo lowered his hands.

"Better late than never." He waved to the approaching men. "You guys take it easy now." He started to turn toward the open door.

Behind him, the gunmen fired. Philo flinched at the blast and looked back. At the first shot from the leader, all the men had opened up. Flame spurted at irregular intervals from guns in their hands. Nothing hit the wall. Somewhere in the Bethesda Naval Hospital, reflected Philo, they must be wondering about the holes appearing in the walls.

The men started across the floor, still firing. Philo waved good-bye. They broke into a run toward him. When they were half way across the hangar, they disappeared, still firing, melting into the shimmering circle.

The ringing of the last shots faded in the air around him. He stepped outside. Janet, Williams, the Maestro and Floyd waited for him.

"I thought you people would be long gone."

"We—" began Janet and hesitated.

"What?"

"We thought—"

"You thought what?"

She blushed. "We thought you might need to be rescued. Isn't that right, Mr. Mento?"

"Hm-m-m?"

"We were waiting to rescue Mr. Thompson."

"Not me," said the Maestro. "I'm just waitin' for the car keys."

IX

"Milton—"

"Listen, Thompson," interrupted Toole, his face the color and texture of a ripe pomegranate on the screen. "If you think I'm going to *pay* this bill, actually *pay* it with real money, you're nuts!" Toole blinked several times, looking at Philo for the first time rather than just seeing him. "What happened to your hair?"

"The style's all the rage this year. Like it?"

"Hair or no hair, this bill is *high*-way robbery! One hundred dollars an hour! My plumber doesn't even get *that!*"

"It's peanuts, Milt."

"Peanuts! Well, get George Washington Carver to pay it, because I'm not. I—"

"It's peanuts compared to the bill you're going to get."

Stunned, Toole blinked at the camera, then narrowed his eyes, his expression fierce. "Oh?"

"Yes."

Toole's voice was muted, simmering for another eruption. "Might I ask what for?"

"You may."

Toole pursed his lips, restraining himself, and leaned toward the camera. "What for?"

"Finding Williams."

"Will—" Toole cleared his throat, retreating from the screen. When he spoke, his voice was crisp and businesslike. "Good work, Thompson. You'll have your check by tomorrow. Tell me about it."

Philo told him.

"What happened to the judge?"

"Justice Weber?"

"Whatever his name is."

"He left an hour ago with Lewis." Philo held his palm toward the camera, calming Toole. "Don't worry. You're not paying for it."

"That isn't what's bothering me. You said he left with that Lewis creature."

"After the police got the Lewis brothers and their cohorts, Williams cranked up the matter transmitter and we wheeled His Honor through. He was still unconscious. We had to get Lewis to a hospital for post-operative care and Maryland seemed to be the closest emergency room."

"What about the press?"

"So far, so good. They don't have wind of it yet, but—"

"Don't have wind of it! Well, give them wind of it! Call them! Hold a press conference! Anything! Just get out the word!"

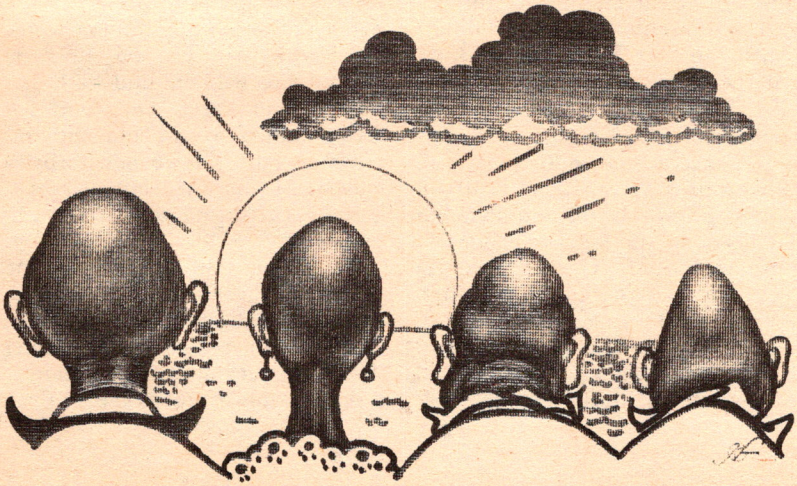
"I thought you wanted to avoid publicity."

"Only the wrong kind of publicity. This is the best publicity we could hope for." Toole extended his thick hand in front of his face, palm toward Philo. "I can see it now. Revolutionary Invention Foils Malefactors! We'll have more orders than we know what to do with! We're going to knock old Dee-troit right back on its heels, Thompson!"

"Don't do it too fast."

"Hm-m-m? Why?"

"I want to get my money's worth out of my Porsche." ■



THE REFERENCE LIBRARY

Barry N. Malzberg

Editor's Note: As a special feature this month, Barry Malzberg offers an analysis of the meteoric—and still growing—influence of Roger Elwood on the science-fiction publishing industry. P. Schuyler Miller's regular column and book reviews will be back next month.

THE CASE OF ROGER ELWOOD

Roger Elwood is, by any accounts, a circumstance unprecedented within science fiction or any of the categories of fiction; it is likely that no editor in history will have as much of an influence upon the market with which he deals. As of this writing, about fifteen anthologies edited by Elwood are published, another thirty-five to forty will be published within the next year, and several more have been contracted. Elwood is also consulting science-fiction editor (with full power of selection) at Chilton Books, Bobbs-Merrill and Pyramid Publications, the latter a major paperback house. The anthologies have been contracted by such houses as Trident, Curtis Books, Chilton, Doubleday, Pyramid, Avon, Pocket Books, Fawcett Gold Medal, Dodd, Mead, Thomas Nelson, Walker Books. He was briefly consulting SF editor at Curtis Books where he acquired ten novels or collections. He may or may not at the time this is published also be consulting SF editor for a huge overseas paperback firm entering the markets for the first time in a way which will enable him to buy fifty novels a year. There are also, at the time of writing, tentative negotiations commencing which may put into his hands the editorships of two of the weaker science-fiction magazines.

This is remarkable; perhaps comparisons are necessary to highlight. In a career encompassing twenty years, Groff Conklin, SF's premier anthologist of his time (1946-1967) produced perhaps forty books. Robert Silverberg, who was until Elwood the most prolific anthologist after Conklin, has produced approximately twenty-five anthologies. Or to put it another way, the most influential editor in the history of our genre, the *greatest* editor in the history of our field, the John W. Campbell of the 1940's, purchased about one million words of copy a year. Elwood, since he entered the field in mid-1971, has already purchased and paid for seven million words, and with increasing editorial responsibilities may be buying three million words a year through 1974 and subsequently.

Or, to look at it another way, the present SF magazines, *all of them combined,* will publish less fiction this year than will appear under the imprimatur of a single editor.

Again: this is remarkable. Even

more remarkable is that Elwood—unlike Silverberg, Conklin or John W. Campbell—had, prior to mid-1971, no particular background in science fiction as writer or editor; he had co-edited a couple of minor paperback original anthologies in the late 1960's, he had free-lanced as editor of a one-issue mystery magazine (*Edgar Wallace*) in 1965. Largely he had sustained himself as a writer of popular nonfiction for a category of magazines—*Photoplay* and its cousins—about as far removed from our little category as any chosen at random might be.

He has gotten where he is . . . well, how has he gotten where he is? The question occupies more time of people in the producing end of the field than perhaps it should; it might be better to simply consider Elwood a *force majeure* (or irresistible object) and come to terms with the question of dealing with him than to be concerned with what might be called the metaphysics of the issue. (I announce myself as one of the first to make that decision; in November of 1972 I saw that Elwood's cumulative momentum was too great for anyone to worry about him falling out of the markets. We would be dealing with him importantly and inevitably for many years to come.) Part of it can be explained in terms which Peale/Carnegie/Transactional Analysis would be happy with. Irresistible energy. Inexhaustible will. The willingness to take twenty rejections for one success. Endless optimism. Sheer determination. If most of the people questioning his success—here is a cliché developing before your very eyes—had half of Elwood's own will and energy, *they* might be in his position. Certainly, no one in the history of this field, and with a respectful bow to many of them, has had a quarter of the energy of Elwood. In a field in which many practitioners are part-timers, monuments or hacks, an explosive energetic force—particularly dealing with markets which have little history (*à la* Dodd, Mead) in publishing SF—can go a long way on that quality alone.

Is that Elwood's only quality? Energy, will to succeed? Coming into the field as a virtual outsider he did so without a strongly defined editorial bias, a set of preconceptions which might have shaped or shut off work, and this is not necessarily bad; insecurity led him, from the outset, to rely heavily upon the suggestions of people (largely writers selling to him) with more background and strongly defined tastes, and this has made him more open than almost all of the strong editors, has led to a catholicity of style and outlook in his anthologies which is all to the good. Energy leavened with humility and accessibility: this does not sound like a bad combination. The indisputable fact is that almost all of the Elwood anthologies are at least adequate relative to the market, and some—"Showcase," "Future City," "The Berserkers"—are above average. And he has enabled some good writers to publish outstanding work which might never have been written without his direct commission. Silverberg, Wolfe, Scortia,

have done extraordinary pieces for him. (He has also, of course, published a lot of bad material. Sturgeon's Law holds.) Over all, if he is not raising the standards of the field, he is not lowering them, and he is offering many writers a range of markets and income previously unavailable to them. Bobbs-Merrill had no history with science fiction before Elwood. Pyramid's program had been moribund for years. Dodd, Mead I have already commented upon. And so on.

In short, Elwood has resulted in a clear expansion of the market. Most of the work he has edited or acquired does not result in a shifting of available markets to different hands but the entrance of new markets into the field. From the standpoint of the writers, certainly from that of dedicated readers, there is no ambivalence in attitude. This is a good thing.

But if the expansion of markets is a good thing, is the concentration of so many into the hands of a single—not particularly qualified—individual similarly to be regarded as a benefit? Should any man, even a J.W.C. in his prime, an H. L. Gold, a—forgive me—Ben Bova be in a position where he can shape and control so many of the streams of what should be a diverse field? Where he can, virtually on whim if he so chooses, create or destroy the careers of beginning or marginal writers?

This is the more serious issue; it is the one with which all of us will be dealing for many years to come. Science fiction is not a very large field but it has fed for almost fifty years upon its diversity, upon the hundreds of writers, tens of editors, scores of outlets which have allowed all of those separate streams to flow, hopefully, together to the benefit of the field and toward its continued growth. What the Elwood phenomenon represents is not diversity but concentration, and with it the very dangerous possibility that if Elwood ultimately fails, he may bring science fiction down with him. Houses hesitant about science fiction which make commitments to him and do not succeed may be unwilling to deal with it for many years to come. Would-be anthologists may find themselves unable to sell available markets flooded with Elwood material of only middling success or less. At this point the identification of man-with-field can be seen to be dangerous.

But as I said, folks, it is too late for these considerations. All of these considerations are *obiter dicta.* We have Roger Elwood and we are going to be living with (and through) him for a long time to come. He may, by sheer volume, have as much of an effect upon the field as J.W.C. or H. L. Gold had through editorial vision. He may have more. Matters are very much in transition.

And in the last analysis what may save us from the specter of SF as Monolith Elwood is precisely the weakness which has led to his catholicity of approach and willingness to listen. With a strong, idiosyncratic editor most of us would not have a chance. But in weakness lies the greatest strength.

The biblical injunction, in our tiny sector of the universe, is holding.

Look who's inheriting!

We showed Mr. Elwood an advance copy of Mr. Malzberg's critique. Here are his comments:

Dear Ben:

As I write this, I am in the midst of astonishment over the column written about me by Barry Malzberg. It came as a surprise to me—and his comments are a bit overwhelming. You see, I have never felt that I "control" anything, really. What I consider, instead, is that, in the case of short stories, hundreds of new sales are being opened up for authors; and in the case of novels, scores of new ones are being bought. Since I buy anything that is really good science fiction, that is, in my opinion, rather a loosening of control. In an anthology, more so than the editor, it is the author's voice that speaks. A case in point is my "Future City" anthology; another is "Showcase": I don't necessarily feel as negative about the future of urban development as did most of the authors for "City"; nor do I, to any degree, accept (personally) all the points of view expressed in "Showcase." I bought this material because it was well-written and, in each instance, because it made sense as worthwhile science fiction. So if anything, an editor who opens up his books to as many points of view as the authors care to put forth is expanding dialogue, not constricting it . . .

In certain instances, I have opened up firms to science fiction and then stepped out completely; in the process, a number of novels have been sold by other authors—a development attributable to the interest generated among the publishers by contributions to the anthologies I've done for them. Thus I hope to extend the horizons of science fiction as far as humanly possible: a record series, film productions, an overseas consortium of foreign language books, and so on. And, more often than not, I will be seeking the cooperation of other experienced editors in order that we all might work toward certain mutual objectives, thereby achieving a needed diversity of idea and approach. This is a decentralization of control, by its very nature.

For the time being, since I happen to be the one taking the initiative, my books seem to be getting the attention. In the future, however, this will undoubtedly change as science fiction grows, and new editors get their feet wet and bring to the genre their own personal visions of what can be done. BUT the climate for this won't be nearly as vibrant without the necessary markets (look at what has happened to the market category personified by *Weird Tales*)—a contraction in this respect does no one any good. Yet if the demand *increases*, and the outlets for satisfying that demand do likewise, you have a healthy, thriving field that will become even more attractive (literally) as time passes.

Sincerely,
Roger Elwood
Linwood, New Jersey

Dear Mr. Bova:

Some criticisms of Robert A. Heinlein's Guest Editorial in your January 1974 issue:

"Patriotism is the last refuge of a scoundrel" means, in context, almost the opposite of what it is usually taken to mean. To Samuel Johnson, a patriot was a factious and disloyal demagogue—a John Wilkes or Patrick Henry. Johnson himself was as patriotic, in our sense, as Heinlein could wish, and almost the only eminent British intellectual to give unwavering support to George III throughout the American War. And to call him a "fat poltroon" is too ridiculous. It would be much nearer the truth to say that he had more courage than a sensible man ought to have.

Many of Johnson's opinions have a strong flavor of Heinlein. "Every man thinks meanly of himself for not having been a soldier" would have made a good epigraph for Heinlein's "Starship Trooper" . . .

DAVID WATKINS
Tre Lales
Penybont-ar-Ogwr, Glamorgan
Great Britain CF32 OLD

Words mean different things to different people, obviously, even within the same language!

Dear Mr. Bova;

In these days of moral eclipse, when the nest-befoulers are lionized but patriotism is made into a dirty word, it is indeed a relief to find men who feel and speak the way Mr. Heinlein did in his address at the Naval Academy. Even more gratifying is the fact that somewhere there was a gathering of our young men to whom these words could be spoken.

(Frankly, Mr. Bova, since the death of JC one had a feeling that the course of Analog is slowly being altered by the new wave *sinister*, that is, from the left. Permitting Mr. Heinlein to speak as your Guest Editor went a long way to restore the balance.)

There will be an onslaught on your editorial towers by the prophets and proselytes of the "new morality" denouncing Mr. Heinlein; they have to stupefy their nonconsciences into silence by parroting their big lie under the Goebbelsian theory that repetition generates truth. My voice is raised to oppose this host.

"Pacifism is a hole dug by cowards for the selfish to hide," were the words of a giant in history, revered and remembered throughout the Western world, even with street names and statues in public

squares. He is not quoted much lately, but the suggestion to abolish Army, Navy and Air Force, replacing all three with a telephone operator to pick up the receiver and say in Russian: "We surrender"—that suggestion is very much in vogue . . .

"*Mea res agitur,*" it is my survival on the agenda, together with the survival of my children, their children and all the truths held self-evident by the framers of the Constitution. Anyone who threatens my survival or their survival is my enemy. Whosoever aids and comforts my enemies is my enemy too, and I am his . . .

MICHAEL B. KASSAY, PE
18 Bluebird Lane, Audubon Woods
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All right, if the situation is a clear-cut choice between immediate survival and immediate death. But what about the more complex choices that face us in the real world? Must we be an implacable foe of Communism, for example, if that attitude will result in our being locked into a long and fruitless war that accomplishes nothing except division and economic ruin at home?

Dear Mr. Bova:

I guess you will be swamped with mail concerning Mr. Robert A. Heinlein's Guest Editorial in the January 1974 Analog, but here goes my say-so. I thought his missile directed at writers was most interesting and much better than Poul Anderson's criticism of the John W. Campbell Memorial Award judges, but somehow I couldn't swallow what he said about the matter of rewriting. It seems as if he's only using his own experience as the basic guideline for all others to follow . . . when one person's meat is another person's poison, more so in the field of writing than anywhere else. I think rewriting plays an important part in the life of every writer toward the sole compensation of publication—it is as natural and human to rewrite, as it is for an artist to polish and touch up his final product. What about the many successful authors who work weeks upon end on just one little sentence—so they will have a certain sense of fulfillment and confidence in having weeded out their brain child in the way that a gardener attends to his flowers . . .

JAMES W. AYERS
609 First Street
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You may be misinterpreting Heinlein's remarks. Certainly a story should be rewritten until it satisfies the writer well enough to send it out for publication. But that doesn't mean endless rewriting and months of polishing individual sentences. Once the story has been sent away for publication, Heinlein and most professional writers urge, you shouldn't rewrite it just because it bounces back to you. That is a trap for the unwary writer. Keep sending out that story, and use your energies to write a new story. Once you believe the story is "finished," never rewrite it, unless an editor makes specific suggestions that you can agree with.

Dear Mr. Bova:

Mr. Heinlein's speech at Annap-

olis came as a most unpleasant surprise to those naïve enough to hope for reform. For many years I had followed his earlier writings, with their gospel of tolerance toward lawful dissent, toward respect for the principle of freedom to choose one's way of life, and toward the ideal of "live and let live."

It seems that he has done a perfect hundred-and-eighty-degree turn in his own well-marked channel, a move which at best is extremely rude, and usually quite hazardous, if one doesn't know what he's doing. Based upon Mr. Heinlein's past performance, I cannot justly accuse him of anything remotely resembling incompetence, but I am curious about the motives behind his heretofore unsuspected political views.

He made the point that anyone who says that "patriotism is the last refuge of the scoundrel," is a very depraved person, regardless of that annoying knowledge that history is crowded with bloody tyrants, bandits and hoodlums too numerous to mention, all of whom waved their respective flags most vigorously, especially when criticized. Loyalty of itself is a necessary virtue for life to continue; I can't dispute this, nor would I want to. But how is loyalty possible, when nations can casually declare any minority as expendable for reasons of expediency, or when a local government can use its taxing and zoning powers to drive out individuals or groups it no longer favors . . .

The lesson to be learned here may not be pleasant, but it is necessary. Loyalty can't be given indiscriminately if it is to be of value. Sometimes, "obedience only" is the better course, while your skills, thoughts, money and actions should remain largely hidden. There is another saying suitable for functional individuals, appropriately maritime in connotation which I should like to call to Mr. Heinlein's attention: "Run silent, run deep."

CONRAD I. SCHLUM
6257 S. Comstock Ave., Apt. H
Whittier, California 90601

And there's still another old saw: "Only the game fish swim upstream."

Dear Mr. Bova:

Mr. Heinlein may be unfair in attacking Dr. Johnson for saying, "Patriotism is the last refuge of a scoundrel," because there is one sense in which this statement is true. Scoundrels often appeal to patriotism to shield themselves against criticism. A good example was provided by the Japanese Army in the 1930's and 1940's. Sections of the army were deeply involved in criminal activities—assassinations, drug trafficking, and various forms of racketeering. These criminals were able to persuade decent Japanese to cover up for them, by the argument that criticism which damaged the reputation of the Japanese Army would be unpatriotic.

Mr. Heinlein is right when he argues that patriotism is essential for human survival, when patriotism means that the individual places the welfare of the community ahead of his own. However, the

word "patriotism" is often used to support a demand that individuals should subordinate their judgment about the welfare of the community to those who have acquired positions of authority. Patriotism in this sense may work against human survival. A community is likely to end up under the control of gangsters or madmen when its members give unquestioning obedience to authority because they believe that it is patriotic to say, "My honor is my loyalty" (the motto of the Nazi SS), or "My country right or wrong." Elimination of criticism cuts off an essential feedback process. Someone who really loves his country may find himself accused of being unpatriotic because he shows that those in authority are doing things that harm the welfare of the community.

MICHAEL LINDSAY
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Patriotism isn't supposed to be a substitute for thinking. Many of Heinlein's own characters have put their own assessments of the situation ahead of the government's desires. At the core of this problem is the fact that every person tends to define for himself what he believes in, and then ascribes those attributes to his country. Thus, patriotism to an eighteen-year-old draft-evader is something quite different from the patriotism of a World War Two veteran. Yet both consider themselves to be "patriotic," that is, acting in the best interests of the nation.

Dear Mr. Bova:

I am ashamed of my initial reaction to Robert Heinlein's story at the end of the Guest Editorial in the January 1974 issue. As I read about the tragic and heroic deaths of the woman, her husband, and the hobo, I had the queasy feeling that I myself would have turned coward and run. I do not applaud myself; I simply confess.

In Mr. Heinlein's terms, mind you, this would have been a moral act, since it would have led to somebody's survival. In practical terms, it would have been more useful than staying there and getting clobbered by that train. Perhaps the smartest, and also most moral act (in Heinlein's terms) would have been to run ahead and flag down the train, if possible.

Is Heinlein's train to be taken as an analog of our modern situation? If so, his heroes may not be the best models for survival for the late Twentieth Century—perhaps we should model ourselves on Larry Niven's cowardly Puppeteers! Traditionally, the human race has depended on intelligence as its distinctive survival tool—the ability to judge when to fight, and when to turn tail. This is the virtue exhibited by the baboon sentry; when he sees the tiger, he doesn't stick around to argue! Heinlein's "parlor pacifists" may be idealistic, but at least they are *looking* for alternative solutions.

Another survival trait in the Global Village is the ability to compromise and cooperate—unheroic, but definitely pro-survival. Extremists of either side, who are blind to the positive points of the other side, and resort to the sort of shallow

ridicule of Heinlein's speech, are dysfunctional and contra-survival. We are all going to get run down by the same train . . .

We still need our baboon sentry, but we also need to seek a friendly arrangement with that tiger.

I am surprised, by the way, that Heinlein had to travel all over the world to find the seeds of war. Perhaps as a Canadian I can speak as a semi-outsider and say that for most of the world, a trip to the USA serves the same educational purpose. The gross disparities in the current world economy, notably between the USA and the Third World, are the greatest long-term threats to peace that I am aware of. Most of the world does not see the USA as the baboon, but as the tiger!

There is some semantic confusion in Heinlein's use of the word "patriotism." There is a healthy kind of patriotism that builds on love of those close to us and lays a foundation for a broader loyalty to all men everywhere (and ultimately, to all sentient life-forms in the galaxy, at least). There is an unhealthy, narrow, so-called patriotism, that has given the real thing a bad name, and is a form of selfishness and self-love. "Patriotism" as Heinlein would have it, consists of putting "my country before myself." But some self-styled patriots mean "my country before the other guy's." Similarly, some phony "pacifists" may use "love for mankind" as an excuse not to "love thy neighbor."

Now, if we could just get the genuine patriots and the genuine peace-lovers together, we might have a chance. I don't think Heinlein's one-sided address served that purpose; as such. It was contra-survival, and therefore immoral!

FLETCHER STEWART
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Heinlein's Guest Editorial is *getting the patriots and pacifists together—at least in the columns of Brass Tacks. As for our wealth being a source of war in the Third World, wouldn't both sides be far better off seeking ways to create new wealth within the "poor" nations?*

Dear Mr. Bova:

. . . I have come to a point where I can no longer stand public bigotry by people who should know better. I'm referring to your remarks, Mr. Heinlein, about "custard-headed pacifists" and "pseudo-males who disdain military service." I am one of those people, Mr. Heinlein; I refuse to serve in the military not because I can't stand the sight of blood or because I'm homosexual, a conclusion you so quickly jumped to (I'm not, by the way), but because I value human life so much that I will not kill someone if there is any other way to solve our differences. I will kill, yes, but only when it is a kill-or-be-killed situation. But when there is *no other reason* for me to stop some other human from breathing, or from seeing his children play in the sun, then I will not take his life. And I object most strenuously to the dominance of our country's capital resources by

an organization dedicated to killing—the military—when there is no need for it. Yes, we should have a defense force and a system for increasing it in case we are attacked, *but we should not have one that is getting more money in peacetime than it got when it was fighting a war.* That is the same thing as putting a chip on our shoulder—we're saying we are ready to fight anyone at any time, so who'll be first? And so the money goes to the military instead of NASA, or to finding new sources of energy or ways to clean up the pollution we've created. We're concentrating our resources on killing instead of improving our living; it should be the other way around. If believing that makes me less than human in your eyes, then I would say it's a matter of where *your* head's at, not mine.

DAVID HORMEL
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Pacifism is not cowardice; that's been proved time and again. But the pacifist actually depends on his more belligerent fellows to do whatever fighting needs to be done. The crux of the argument is, what "needs to be done?" How heavily armed should we be, in a world rife with war? Can we make disarmament, or at least arms limitation, a practical alternative to nuclear confrontation?

Dear Mr. Bova:

I write this letter in order to comment on the Guest Editorial by Robert Heinlein. Mr. Heinlein's remarks about the importance of the willingness to die for one's society are quite true. If ever the members of a society prove unwilling to sacrifice their lives, that society is doomed. However, I feel it only fair to point out that there is another side to this issue that Mr. Heinlein did not explore. When a baboon dies to preserve his group, his enemy is a member of another species. When a human being performs the same sacrifice, his enemy is usually another human being. If war brings out the noblest instincts in man, it also brings out the worst excesses.

There is nothing new about this. What is amazing is that it is so difficult for many people to grasp all sides of the issue. Mr. Heinlein criticizes those who view all military men as professional killers. It is apparent that he views professional military men as representing the best our society can produce. Neither viewpoint is completely true. Obviously there are highly dedicated, honorable men in the military who give their all for their country. There are also men who massacre women and children. Hopefully the two extremes are seldom embodied in the same man, but history shows that they often are. The ambivalence in the professional soldier's position is ironic. No sane man can wish for war, yet a soldier's career can depend on serving in combat. Hopefully, those wishing for war are few, but the recent combat in Vietnam demonstrated that there are all too many who are eager to get their tickets punched by serving in combat . . .

As for public distrust of standing armies, that is an old American tradition. In a permanent professional

army, a soldier's first loyalty must be to his regiment and to his commanding officers. This can lead to great heroism. However, it can lead to great abuses if the officers decide to take power for themselves. Fortunately America has been spared this so far, but we can see this happening all over the world whenever we pick up the papers.

I would certainly agree that pacifism is a bankrupt philosophy. The person who is a complete pacifist could in some situations be as evil as the mass murderer. For example, someone has invaded your home with the intention of killing you and your children. Would it be moral for you to submit to him, because you refused to take human life? Suicide is a person's own business, but allowing a murder to take place puts the guilt on his head as well as the man who did the deed. However, we must distinguish this sort of pacifist from someone who refuses to fight an unjust war. Granted that it is a noble thing to do to die for your society. It does not follow that it is noble to go drop bombs on women and children . . .

I don't wish to appear completely critical of Mr. Heinlein's position. I too felt the hair rising on the back of my neck while reading his essay. However, we must realize that this is something we have inherited from our ancestors. As he points out, baboons will risk their lives for their groups. Animals have also been known to kill conspecific members. If man does it much better and on a greater scale it is because he has developed larger social groupings and has technology. But we are also the only species that knows what it is doing. Therefore, it behooves us to figure a way out for ourselves.

TIMOTHY J. SMITH
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Conflict is an inevitable part of human nature. War is the form of conflict that nations engage in. Many SF writers—including Heinlein—have suggested that the "cure" for war lies in world government.

Dear Mr. Bova:

I take exception to a couple of the points raised by Robert A. Heinlein in the January issue . . .

The first is a quibble, but, I think, an important one—his bemoaning of a lack of inclination to military spending in this country. Last time I looked, something like seventy-three percent of the total annual budget was going to the Defense Department. I don't think *anyone* can call that picayune.

Secondly, his discussion of patriotism and the current lack thereof. Trouble is, Mr. Heinlein, my generation (just out of college) believed what we were taught about the Constitution and the Government in the grade schools of the Fifties and high schools of the Sixties. Then we entered the real world, and discovered that there is much more fantasy in those good old civics courses than in thirty years of pulp magazines.

Kennedy was the last President to even try to put a good face on it. Since then, our Presidents have

been an ego-bloated imperialist and a crook who would attempt a *putsch* tomorrow if he thought he could get away with it. In the same time-period, Congress has gone from a rubber stamp to a somnolent dinosaur. (Whether the awakening of the past few months ever amounts to anything remains to be seen, at this writing.)

Is it any wonder, then, that a massive shift toward cynicism took place? Heinlein made the point in several of his books: you lie to your children at your own peril. It's just as true of a culture as of a family.

Another popular misconception which Heinlein seems to share is a confusion between the refusal to defend one's country and the refusal to blindly follow political leaders. I'm not particularly interested in which group of corrupt Asians holds power in their third-rate country; I am definitely opposed to risking my life in their civil war. I was lucky enough not to be drafted, but if I had been, I would not have served in Vietnam. It is not something I am proud of, no more than I am proud I'm not a rapist—in both cases I am refusing to do something that offends my sense of right and wrong; conscience, if you like. That US involvement in Vietnam was a hopeless cause has been known since 1954, when Eisenhower refused to bail out the French at Dien Bien Phu, *for that reason.* To my mind, a man who sacrifices his life for nothing is less a patriot than a man who saves himself for when it counts . . .

Heinlein also states that a country is on the skids when it loses its patriotic fervor. Probably true; I won't argue the point—but the crisis-point comes before that. When patriotism becomes flag-waving, you can kiss it good-bye. When it is a whore used to lengthen the careers of fading hacks like John Wayne and Bob Hope, when it is cynically exploited by politicians for personal aggrandizement—it is already dead. Take Agnewism (before the fall), take the hard-hat syndrome, talk to a factory worker over a beer—that's where you'll find the knee-jerk response conservatives are so fond of disparaging in others. Does that have anything to do with promoting survival of the race? If so, I don't see it.

I believe that one man who can make independent, rational decisions uncolored by emotional expediency is worth more—to the race—than all the love-it-or-leave-it types who ever lived. And it seems to me, Mr. Heinlein, that more of these people are to be found in my generation than in yours.

P.S. "Soldier's Home" in the December 1973 issue was the most asinine piece of crap I've seen since the unforgettable "Generation Gap." The guys who wrote those things should be spending time with a shrink instead of pounding typewriters.

MICHAEL HILL
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Analog has long been a forum for ideas and opinions, from all *points of view.*

GUEST EDITORIAL

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already know how to make children to order—the principles of animal husbandry are all that we need. But we don't do it. We wouldn't do it if we did have artificial wombs, if for no other reason than the fact that it would be astronomically expensive and would teach us almost nothing. Natural infants are turned out too cheaply for that.

These *Frankenstein alarmists* belong with the fire starters who burned early anatomists as witches for their dissection of human cadavers and the Inquisitors who made Galileo deny that the Earth moves.

History is too full of episodes in which science has suffered at the hands of a misinformed population. Once churches forbade anesthesia in childbirth on the grounds that the Bible said birth should be painful and if there was no pain in childbirth women would become so promiscuous that the destruction of society would result.

What frightens and therefore incites these antiresearchers is the uncertainty that new knowledge brings. It was summed up rather well by Nobel-laureate Francis H. C. Crick, a codiscoverer of the structure of the genetic chemical, DNA: "The development of biology is going to destroy to some extent our traditional grounds for ethical beliefs and it is not easy to see what to put in their place."

I should like to add that it will only be those grounds based on false assumptions about the universe that will be destroyed. But, this is not a foreboding prophecy. Science has persistently destroyed "traditional grounds" throughout history.

Consider the humans of half a million years ago. Everywhere they turned there was pain, and the objects which caused pain gave no satisfaction of revenge. Because these beasts were human they had perception of future and cognizance of their own lives and so they worried about the future and feared for their lives even when no immediate danger was visible.

Because people had a need for confidence in their future, there developed tribe members to fill it. Individuals who could profess power over the elements could obtain real power over the people. There is a valid argument to be made that the development of civilization began when pre/early *Homo sapiens* discovered that he could become a leader by being the smartest instead of the strongest, and most important for humanity, that his power could be maintained beyond his physical prime and then transferred to his son upon his death by the telling of "secrets." Knowledge began to accumulate through this effort to assure the continuity of power.

Now we have the king/priest whose power is based on his mas-

tery of the universe. He follows facts as far as he knows them but from there he relies on his imagination to fill the need. When new facts are uncovered that contradict the dogma, as they inevitably do, somebody's head rolls. This is particularly sad for the discoverer since it is usually his head, and ironic, since the facts are undeniable and must be absorbed—so the religion eventually does so with a "we-knew-it-all-the-time" attitude.

The successful religion is the one which provides a society with the illusion of a firm, unchanging world while simultaneously absorbing new information, albeit slowly, so that the society may evolve to fit a changing world. These are the two inseparable sides of the coin. If the religion/authority refuses to accept useful new information fast enough, society suffers, and either the society itself fails or the religion/authority is replaced entirely, that is, there's a revolution.

This is analogous to biological evolution. The DNA of the genes provides a stable basis to faithfully transfer the characteristics of one generation to the next. But when conditions change, what was favorable for one generation is no longer useful to the next and change must occur. So the DNA must also have the provision for mutation. Neither evolution nor theology will serve the world unless they adopt that new information so necessary for survival, and adopt it quickly enough to meet the need.

We are now in a time when the world is changing faster than ever before but *we* are the ones changing it. We are creating hazards to human existence at a galloping rate which is continually increasing not because of the information we have but because of the political and economic decisions people make in using that information. For example, we know that the only form of cancer with an increasing death rate is lung cancer, and the data is overwhelming that this is the result of smoking tobacco. Yet the number of smokers is increasing. Our priorities are wrong.

The only hope for humanity is that the forces which resist change resulting from new information cannot stop the gaining of new information vital to survival. They must not be allowed to interfere with investigations of human biology for fear of change. It is better that their efforts be spent developing the responsibility to properly use the information.

We are now faced with a "religious" situation which does not necessarily encompass the organized church. Views are becoming popular and taking on an intrinsic "truth" which is independent of facts. Among these views are moral judgments against science based on events which are the result not of science but of technology misapplied. So it is that science is

blamed for The Bomb and for pollution. Now all of the fear of the future, which Toffler has called *future shock*, is being manifested as a hostility against the research work which is the only thread we have to find our way out of the labyrinthine ills we have created.

Scientists are willing to go to great effort to see that experiments do not violate human rights. The voices of scientists who are concerned about the ways in which scientific information is being used are heard daily protesting misuse. For instance, the National Institutes of Health are currently trying to find a humane ethic for studying fetuses which must be aborted.

We are approaching a day when for the first time in history our species must limit and stabilize its numbers to survive. We don't know how this will affect human biology but we do know that given all of the pollution, radiation, diseases and natural genetic defects that are building up in our world, the only way we will survive is to learn everything we can about the workings of the biological organism, *Homo sapiens*, and then accept the responsibility which comes with knowledge: to use it well.

Walt Kelly, in his comic strip, *Pogo*, once wrote a comment which describes the hysterical Frankenstein Phobia which threatens science: "In the world of the blind, the one-eyed man is king. In the world of the insane, the half-wit is hanged." ■

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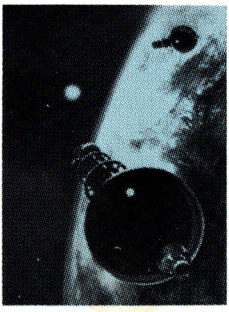

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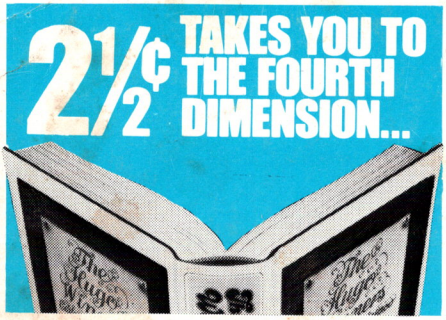

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